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ON
MYOFIBROSITIS AS A SIMULATOR OF OTHER MALADIES.

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EMERITUS PROFESSOR OF MEDICINE IN THE VICTORIA UNIVERSITY OF MANCHESTER; CONSULTING PHYSICIAN TO THE ROYAL VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE, AND TO THE MANCHESTER ROYAL INFIRMARY.

THE muscles make up about 40 per cent. of the weight of the body and actually weigh rather more than all the other organs together, including skin, fat, and blood. They are subject to all the stresses and strains of daily life, which vary greatly with the occupation followed. They are also apt to be affected, directly or indirectly, by the many changes in temperature and humidity which are characteristic of our British climate, in a manner we do not fully understand. Under these circumstances it is not surprising that the voluntary muscles are liable to suffer. Very little attention is paid by medical and surgical teachers to the varied symptoms which may be caused by diseases of the muscles compared with that devoted by the anatomist to their structure and distribution. Little space is devoted to this subject in the standard text-books of medicine. In one 11 pages out of 943 deal with the muscles. Ten pages are concerned with rare muscular diseases and only one with fibrositis, the commonest of all. In another text-book three pages out of 1711, and in another two pages out of 1139 deal with fibrositis. Naturally students regard muscular diseases as of little importance and in after life are apt to ignore them when searching for the cause of a pain. I hope to be able to show that this attitude of mind is apt to lead to unnecessary errors in diagnosis, and also to show how they may be avoided.

Myofibrositis has various names, such as myalgia, rheumatic myositis, muscular rheumatism, or simply fibrositis, and this diversity of nomenclature is apt to cause confusion in the mind of the patient and loss of confidence when he is told by one medical man that he has myalgia and by another that he suffers from fibrositis, so it is well to explain that these various terms really signify the same condition of inflammation of the fibrous portion of a muscle. This subject is of much practical importance, as fibrositis, in the form of either myofibrositis or neurofibrositis, is one of the commonest causes of pain in this country and is responsible for a great deal of pain and disability. Sir Walter Kinnear has shown what a loss to the nation is caused by the prevalence of industrial rheumatism, and has estimated that in 1927 not less than £5,000,000 was paid under the National Health Insurance Scheme in Great Britain on account of rheumatism, and that some £12,000,000 was lost in wages from the same cause. We may conclude that a large proportion of this disability is really due to fibrositis. In addition to this fibrositis is apt to masquerade as a more serious malady and so give rise to much unnecessary anxiety if its true nature is not promptly recognised. Severe pain cannot be ignored, so medical advice is usually sought at an early stage. Slight and intermittent pain is often borne for long without complaint, though in time it is apt to give rise to morbid fears. When relief is at last requested the prompt recognition of the fact that the pain is due to fibrositis may save unnecessary worry in those who have begun to dread that it indicates some serious organic disease. The immense relief shown by an anxious sufferer when he is once convinced that his pain is due to a simple and removable cause and not to a progressive and incurable malady is remarkable. There is a grain of truth in the proverb "Fear kills more than disease," and, of course, another version, "Fear kills more than the physician" is certainly true. These are the cases in which the quack is apt to find his opportunity, as, trading on the fears of his client, he may employ some drastic form of local counter-irritation such as the application of the "life-awakener," followed by rubbing in croton oil, which may effectually remove the pain. He then claims to have cured the serious malady which only existed in the imagination of his credulous patient.

It is worth considering for a moment why it is that normally insensitive muscles may become the source of severe pain. The sensory nerves are connected with the muscle spindles which lie in the fibrous tissue which surrounds the muscular fibres. The tendons are also supplied with special sensory nerve-endings. In health we are not conscious of the impulses received from these structures. When, however, the muscles are strongly compressed, as in tetanus or in ordinary cramp, we at once become unpleasantly aware of their existence. In fibrositis these nerve-endings are irritated by the inflammatory exudate and there is a constant aching pain, which is aggravated by any contraction which compresses them and excites them still more.

DIFFERENTIAL DIAGNOSIS OF PRÆCORDIAL PAIN.

Pain which is felt in the præcordial region may be a source of anxiety to both patient and medical man; to the patient because he associates pain in this area with disease of the heart, and to the medical man because he realises that such a pain may be due to some form of angina pectoris. Fortunately, on investigation the pain often proves to be due to a local myofibrositis. It is important to be able to recognise this with certainty. I am not referring to pain in this area occurring in the course of an acute illness, such as pleurisy or pericarditis, which may be recognised by definite physical signs, but to pain in those who have no fever and are able to go about. Examination of the cardiovascular system reveals no abnormal physical signs, but this negative evidence does not eliminate the possibility of the pain being due to angina pectoris. In true angina the pain is intermittent and is brought on by exertion, emotion, or sudden chilling of the surface of the body. It tends to radiate across the chest and may extend into one or both arms or up the side of the neck—a distribution which may be simulated by fibrositis. The pain of fibrositis is induced or aggravated by use of the affected muscle, usually the pectoral or intercostal muscles, but not by other forms of exertion, such as walking uphill. It is unaffected by emotion. It is not accompanied by a sense of constriction or by the sudden fear of impending death which is so characteristic of some attacks of angina. Although rest eases both kinds of pain the well-known immediate relief afforded by the use of vasodilators in angina is not experienced when the pain is due to fibrositis.

Helpful as careful attention to these points may be, more positive evidence of the presence of fibrositis must be looked for. Careful palpation of the pectoral muscles in the relaxed condition with the arms hanging by the side may reveal the presence of a tender swelling near the lower border. The muscles should then be brought into action by asking the patient to press the palms of the hands firmly together with the arms extended in front of the chest. Firm pressure over the sternocostal insertions of the muscle will often elicit marked tenderness. On palpation of the rest of the muscle local swelling may be defined and its tenderness appreciated. The condition of the intercostal muscles may also be examined in the same area by making pressure over each space while deep breaths are drawn. The following two cases illustrate these points:—

A medical man brought his wife to see me because she was anxious about a pain situated at a point just above the left breast. This pain at times extended up the left side of the neck and was also felt in the left arm. She also suffered

from the hot flushes incidental to her age, which was 48. This lady had been in the habit of studying her husband's books and, as a result of her medical reading, she had come to the conclusion that she was suffering from angina pectoris. She had nervous tachycardia, but otherwise the cardiovascular system was normal. On further inquiry it was found that the pain first came on after unusual efforts had been made with the arms and shoulders, was not induced by walking exercise, and was not paroxysmal in character. Examination showed that there was fibrositis of the left pectoral muscle at the point where the pain started and also at its sternal attachment. There was also fibrositis of portions of the left sternomastoid and deltoid muscles which accounted for the extension of the pain to the neck and arm. It is easy to understand how a woman at the climacteric, when morbid fears of disease are common, with a little medical knowledge, which is proverbially dangerous, became convinced she was suffering from angina pectoris. It is not unlikely that some of the cases which have been described as false or vasomotor angina have been due to fibrositis.

Another case was that of a man aged 28, a "tackler," who had suffered intermittently for four years from a pain in the left side of the chest. Shortly before the pain was first felt the muscles of his shoulder, arm, and chest had been subjected for a time to unusual strain. Since then he had been liable to severe attacks of pain commencing at a point just above the left nipple. He was free from pain on waking, but any exertion after rising, such as stooping to lace his shoes, might bring it on. On some days the pain did not come on until the afternoon, but it occurred at some time or other every working day. The pain at times had extended round to the axilla or up the left side of the neck as far as the ear, and at one time it used to reach the middle of the upper arm. Occasionally he had palpitation, and he had been told that he had strained his heart. Such a history and the position and distribution of the pain suggested that it was due to angina pectoris. Examination of the circulatory system revealed no abnormality. The age and occupation of the patient, and the incidence of the pain after work with the arms but not after walking, all indicated that the voluntary muscles and not the heart were at fault. On careful palpation a tender swelling was found near the lower border of the pectoralis at the point where the pain usually started. This swelling was felt most distinctly when the arm was held up above the head.

Fibrositis of the pectoral muscles appears to be more common on the left side than on the right. This is remarkable, as the right arm is used more than the left. Possibly this difference is more apparent than real, because a pain which is felt on the left side in the præcordial region is more likely to give rise to alarm and a desire for advice and treatment than a pain on the right side.

Quite recently, however, I have seen a case in which fibrositis of the right pectoral muscle had caused in the mind of the patient grave fears that he was suffering from cancer of the right lung. His own medical man, even when a radiogram of the chest had shown a normal appearance, had not convinced him that his fears were groundless, and so he sent him to me to endeavour to disabuse him of this obsession, which had originated after the death of a friend from malignant disease of the lung.

The Importance of Rest in Treatment.

While considering fibrositis in this region we may recall the principles laid down by Hilton in his well-known "Lectures on Rest and Pain," and emphasise the importance of securing adequate rest and relaxation of these muscles in the treatment of this condition. Dr. R. T. Williamson has drawn attention to the importance of support and fixation of the arm in the treatment of brachial neuritis, which is a common form of neurofibrositis. He pointed out that treatment often failed to relieve pain until the arm was fixed in a sling which supported it and raised the elbow sufficiently to elevate the clavicle and prevent the weight of the arm from dragging on the shoulder and nerves. The value of this I can confirm, and may add that the same kind of support is just as important in the treatment of fibrositis of the pectoral and other muscles concerned in the movements of the shoulder. An ordinary sling may be used, provided it is properly applied, though the double objects of fixation and elevation, so as to take the weight of the arm off the shoulder, are attained better by the use of the "Euphorus" sling, which may be worn by night as well as by day until the pain has disappeared. It may be mentioned, in passing, that this form of support is useful in the treatment of that obstinate form of myofibrositis which develops in the uppermost portion of the trapezius muscle with a well-defined local swelling in that area.

Other Conditions Simulated by Fibrositis.

Pleurisy may be simulated by fibrositis of the intercostal and other respiratory muscles, as the pain is felt in the side of the chest; it is severe and is aggravated by respiratory movements and there may be a slight temporary rise in temperature. In pleurodynia, however, there is no persistent fever, the physical signs of pleurisy are absent, and a localised area of tenderness can usually be detected in the region where the pain is felt.

Diseases of the blood-vessels may also be simulated by fibrositis. Intermittent claudication, in which, after a short walk, pain in the leg stops further progress until a brief rest has been taken, is due to inadequate supply of blood to the muscles resulting from narrowing of the lumen of the artery. In the following case the description of the symptoms as given by the patient was strongly suggestive of this condition.

A clergyman, aged 60, complained of pain in the leg at the back of the knee, which came on after he had walked a short distance and passed off when he rested. He had, in fact, an intermittent limp similar in character to the special form just mentioned. There was, however, no change in the colour of the skin and there was no sign of arterial disease. On examination the pain was found to be due to fibrositis of the hamstring tendons and was probably gouty in origin. A suitable diet was recommended, colchicum and potassium citrate were prescribed, and peat packs were applied at Buxton. He rapidly recovered and soon was able to walk about in comfort.

Occasionally a strip of the soleus muscle is inflamed and simulates phlebitis, but careful palpation shows that the tender cord-like swelling is in the muscle and not in a vein. Lumbago we all know, some of us more intimately than we like, but I do not propose to discuss the various causes of backache and how they may be distinguished from lumbago, as that is a familiar theme.

Fibrositis of the Abdominal Muscles.

Lumbago is more common in men than in women, who are more liable to fibrositis of the muscles of the anterior abdominal wall. This form often gives rise to fears of intra-abdominal disease. When you have determined that the pain is due to myofibrositis it eases the patient's mind to explain that the condition is of exactly the same character as lumbago but involves the muscles in front of the body instead of those of the back. Of all the muscles in the anterior abdominal wall the recti are the most liable to fibrositis. The pain which this causes is apt to be attributed to some serious intra-abdominal condition; it was described as "peritonitis muscularis," by J. P. Frank in 1792. In spite of the name, he evidently recognised that it affected the abdominal wall alone and not the peritoneum. The presence of three tendinous insertions in addition to the terminal attachment of the muscle explains its liability to inflammation. Pain in the right iliac region suggests appendicitis.

A man who was actively engaged in business and also hunted regularly complained of an aching pain of several weeks' duration in the right iliac region. He had come to the conclusion that he was suffering from appendicitis. There were no other symptoms. When the abdomen was examined with the muscles fully relaxed no superficial or deep tenderness or swelling could be detected. When the recti were brought into action by raising the trunk half-way between the supine and sitting positions an area of tenderness was at once found in the outer border of the right rectus just where the pain was felt. The application of iodine and belladonna ointment was soon followed by disappearance of the symptoms.

I have described elsewhere a similar case in which the pain came on after punting, soon after the patient's

sister had suffered from an attack of acute appendicitis, so that suggestion had no doubt helped to arouse the fear of appendicitis.

Fibrositis of the upper segment of the left rectus or of its fibrous insertion into the fifth, sixth, and seventh ribs may simulate gastric disease, as it is liable to be increased after a meal if the stomach becomes distended. Otherwise it bears no relationship to digestion, is relieved by rest in the supine position, and is aggravated by any effort which exercises or strains the abdominal muscles. Often an actual swelling can be detected in the muscle, or at any rate an area of pain and tenderness is found when the muscle is brought into action. I have recorded a case in which pain in the right hypochondrium had been attributed for four years to biliary colic, but on investigation proved to be due to fibrositis of the outer part of the right rectus. A continued pain in the lower part of the abdomen may give rise to a dread of malignant disease.

The chief characteristics of fibrositis of the abdominal muscles are these. The pain is of a dull aching character, generally felt at one particular spot, from which it tends to radiate. It is relieved or removed by rest in bed at night. It comes on again soon after rising and increases in severity and in area during the day. There is no cutaneous hyperæsthesia. Certain movements may be acutely painful, especially if executed after resting in one position. For examination, the patient should first of all lie flat on the back with the knees drawn up, so as to relax the muscles. On palpation a definite, slightly tender swelling may be felt in the muscles at the seat of the pain. The recti muscles should then be contracted strongly by raising the head and upper part of the trunk from the recumbent position. Firm pressure should be made with the tips of the fingers on the muscle at the point where the pain is felt, and it will be found to be acutely tender. This is the important point: the tenderness under the same pressure is far greater when the muscle is contracted than when it is relaxed. This is just the opposite to what is found when tenderness is due to some intra-abdominal disease, as the contracted muscle then acts as a defence and the tenderness is less than when pressure is made with a relaxed abdominal wall, and cutaneous hyperæsthesia is usually present. In the contracted muscle some fullness, or even a definite swelling, may be felt at the site of the fibrositis.

Headache.

The subject of headache is an important one and the determination of the cause may be difficult. Broadly speaking, headache may be due to local disease either inside, outside, or in the bones of the skull, or to changes in the nerves or the blood-vessels of the head, to abnormalities of the eye or ear, or to general toxic states resulting from maladies of the alimentary canal, kidney, or other organs; or, again, the headache may be of the paroxysmal type known as migraine. In searching for the cause of a headache it should be remembered that one cause, by no means rare, is fibrositis of the occipito-frontalis muscle and of the epicranial aponeurosis. This type of headache is sometimes called "rheumatic." In arriving at the conclusion that pain in the head is due to fibrositis the other forms of headache must be excluded by a full examination, which in these cases reveals no signs of any other malady. A fibrositic headache may simulate a cranial neuralgia, though it is generally more constant. It may be felt chiefly in the region of the occipital or frontal muscle or it may be diffused all over the region covered by the epicranial aponeurosis. Voluntary movements of the scalp are often painful, and on careful palpation small tender swellings may be detected in or at the line of attachment of the occipital or frontal muscular fibres to bone or fascia. In some cases there is a diffuse tenderness all over the scalp. The pain may be affected by changes in the weather and by exposure to cold. In men, at any rate, liability to this form of headache has not appeared to be related in any way to the amount of hair on the head. The previous or simultaneous occurrence of fibrositis of the muscles of the neck or trunk may serve as a guide to the recognition of the true nature of the headache.

An example of this type of headache is furnished by the case of a woman of 63 who complained of headache of a year's duration. None of the usual causes of headache appeared to account for it. The pain shifted from one part of the head to another and at times extended all over the top of it. It was worse when she was tired. There was a dry arthritis of both knees and an early cataract of one eye This headache was found to be due to fibrositis of the scalp.

Neuritis, which is usually a neurofibrositis, is a common cause of pain and is not infrequently associated with myofibrositis. When it occurs as an independent affection it is less liable than myofibrositis to cause morbid fears, because it occurs so much more frequently in the limbs than in the trunk. It is, moreover, well known that a pain referred to a particular nerve may be due to irritation or pressure at some point along the course of the nerve and not to fibrositis. Thus, in a persistent brachialgia, a search for an accessory rib is usually made with the aid of X rays; in sciatica this factor is borne in mind and a careful search is made for disease of the spine or pelvic organs. How elusive such a source of the pain may be was well illustrated by a case in which a man had a severe chronic sciatica with marked wasting of the muscles. We searched thoroughly for a local cause but failed to find one, and this was before X rays had come into general use. Later on a swelling developed in the gluteal region. On exploration this proved to be due to a hydatid cyst in the sheath of the sciatic nerve. The pain of persistent myofibrositis, like that of neuritis, is very exhausting, and its effect may be felt for some time after it has ceased. This after-effect may be experienced either when the pain is only of moderate severity but long duration, or when it is of shorter duration but greater intensity. The feeling of exhaustion is very depressing and helps to suggest all kinds of gloomy forebodings as to the source of the pain and the final outcome of the illness.

The points which may be specially emphasised are: (1) Myofibrositis is a very frequent malady not only in well-known situations, such as the lumbar muscles, but in many other muscles of whose existence we are hardly aware in health. (2) Myofibrositis must always be considered as a possible cause of an obscure pain. (3) As fibrositis is apt to cause much unnecessary anxiety, its prompt recognition is most important for the relief of the patient's mind. (4) Though not a fatal malady it causes much distress and disability and is worthy of much more attention and research than it has received hitherto.

Prevention and Cure.

We know so little about the cause of fibrositis that it is difficult to say what precautions can be taken to prevent it. Many cases date from a sudden or prolonged strain of the affected muscle to which little attention was paid at the time. This indicates that rest of an overstrained muscle until all pain has disappeared would in many cases obviate a subsequent and probably prolonged attack of fibrositis. This rest is even more important if there is any indication that some of the muscular fibres have been ruptured by a sudden strain. Those who have once suffered from fibrositis are liable to have recurrences unless they are able to determine the exciting cause in their particular case and to avoid it in the future. Any form of severe exercise which has not been undertaken for some time, such as that entailed by gardening, rowing, or salmon-fishing, and which leaves only stiffness in many men, may induce a sharp attack in those who are liable to fibrositis. This may be prevented by taking the exercise in gradually increasing amount at the beginning of a holiday—unfortunately a counsel of perfection for those who can only take an occasional day off from an otherwise sedentary

existence for the special form of exercise they prefer. Any chilling after exercise in damp clothes may bring on an attack, but this can usually be avoided by a little forethought. If exposure to any of these conditions is unavoidable, the ill-effects may often be warded off by a hot bath, drinks of some hot fluid to which the addition of alcohol is by no means necessary, and rest in bed. Prof. Stockman considers that fibrositis is usually the result of a secondary infection, and Rosenow has shown that myofibrositis may be caused by streptococci of low virulence lodged in the capillaries near the tendinous insertions of the affected muscles. It is therefore important to search for a septic focus in the mouth, nose, throat or elsewhere which, by causing secondary infection, subinfection, or toxæmia, may be the primary cause of the condition. If such a source is found it must be treated at once. A friend and colleague used to suffer greatly from lumbago until it was discovered that he had a marked focus of dental sepsis. As soon as this had been removed the lumbago disappeared and has not recurred. In many cases no septic focus can be found, so that other causes must play their part. A sudden onset without fever suggests the rapid deposition of some chemical irritant such as occurs in gout, and it is probable that some forms are really gouty in origin. It is important to avoid all excess of either red meat or sweets unless plenty of outdoor exercise is being taken. Certain wines, such as claret, may predispose to an attack.

At the onset of an acute attack a vapour bath at 120° F. for 15 minutes, or a hot bath with the water as hot as it comfortably can be borne, followed by rest in bed, will give much relief. At the same time grs. 5 each of aspirin and Dover's powder may be given and repeated several times at intervals of four hours. The application of a belladonna fomentation over the affected muscle will also help to ease the pain. Other useful local applications, such as a liniment composed of equal parts of camphor, menthol, and chloral hydrate, or one of the liniments or ointments containing menthol and methyl salicylate, are well known and efficient in both acute and chronic forms of the malady. In gouty cases colchicum and alkalies are of service. In subacute and chronic cases iodine is useful internally, and iodine and belladonna ointment is a valuable local application. Five grains each of guaiacum and sulphur thrice daily after food may be given in milk or in a cachet. Tincture of cimicifuga, which should be prescribed with a few minims of liquor potassiæ to prevent precipitation, is often beneficial. In prolonged or recurrent cases a course of treatment at Buxton, Harrogate, or Bath is strongly to be recommended. There is a great field of useful work for clinics specially equipped for the treatment of rheumatism, like that organised by the British Red Cross Society in London, where the benefits of hydrology and physical treatment will be available for those who could not otherwise obtain them.

Each of the forms of fibrositis mentioned may require adaptation of these general modes of treatment to suit the special requirements of the case, as, for example, in securing adequate rest for the affected muscle. In the treatment of abdominal fibrositis rest in bed is most important, but many patients prefer to put up with the pain rather than to submit to this treatment as soon as they realise that there is no internal lesion, such as a gastric ulcer. It happens occasionally that one of these cases is admitted to a hospital ward, and then the good effect of rest in bed is striking when compared with the slow progress made when treatment is carried on while the patient is up and about. The sacrifice of a little time for adequate rest in bed would be well worth while in many cases where this precaution is neglected and a chronic fibrositis becomes established. In the treatment of fibrositis of the scalp the local application of one of the remedies already mentioned may do much to relieve this form of headache.

SEGMENTAL HYPERALGESIA ASSOCIATED WITH HÆMOPTYSIS.

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DURING an investigation, extending over four years, of pain and its attendant phenomena in pulmonary disease, I have observed that segmental or referred cutaneous hyperalgesia in most of my cases has been associated with recent hæmoptysis. Some of them have exhibited other reflex signs such as muscular tenderness over one side of the chest, localised tonic spasm and tenderness or, in the later stages, localised wasting of certain groups of muscles such as the trapezius, pectorals, and scalenes. When acute and subacute pleurisy has been present direct cutaneous hyperalgesia and deep tenderness respectively were found, a fact to which I referred in a previous communication.[1] Some cases presented complex signs very difficult to interpret, but in others the phenomena were so clear-cut and constant that I have thought it worth while to report examples, and to confine my remarks mainly to the association of segmental hyperalgesia with hæmoptysis.

These examples are taken from a series of over 300 cases, of which 180 gave a history of hæmoptysis. Segmental hyperalgesia was present in 42 of them. In general, the areas of hyperalgesia were discovered after the onset of the hæmoptysis and persisted for about 14 days. Sometimes the patient said that the skin had been tender for several days before the hæmorrhage. When a further hæmoptysis occurred, the hyperalgesic areas reappeared in the same position and lasted again for 14 days. The hyperalgesia was assumed to be segmental if two areas were found, one on the anterior aspect of the chest and the other posteriorly (see Figs. 1, 2, and 4), and both corresponding to part of the cutaneous distribution of the same spinal segment or segments. Each hyperalgesic area was roughly circular in shape, with a sharply defined border, about 2 inches in diameter, and they were found generally either near the apex or near the base of the chest. The apical areas (see Figs. 1 and 4) were situated close to the mid-line near the sternum in front, and near the spinal column posteriorly, but both being either to the right or left of the mid-line. The basal areas (see Fig. 2), both anterior and posterior, were found about 2 to 3 inches from the mid-line. Where a pulmonary lesion was discovered, the hyperalgesic areas were invariably on the same side as the lesion. Generally the areas were found to persist for 14 days after the hæmoptysis, and each area gradually diminished in size. It was noticed that the anterior area persisted for several days longer than the posterior. The following cases are cited as good examples of the condition.

Illustrative Cases.

CASE 1. *Inextensive, inactive pulmonary tuberculosis in the right upper lobe.*—A married woman, aged 27, was seen first on April 30th, 1926, when she complained of a cough accompanied by small hæmoptyses for three days, scanty expectoration, and dull pains in the front and back of the chest. There were no night sweats, no dyspnœa, and no loss of weight. Inquiry into the family history revealed nothing relevant. The only previous illness which she could remember was a severe cough five years ago, which lasted for two months. Since then she had been entirely free from symptoms until the time of examination.

She was a moderately well-nourished woman and the weight was 8 st. 3 lb. The temperature was 98·4° F., pulse-rate 80, and respiration-rate 24. Slight cyanosis of the finger-nails with central pale areas was observed. All systems except the pulmonary were found to be normal.

The chest on inspection showed slight flattening and diminution of movement at the right apex. Palpation confirmed the diminution of movement. No appreciable alteration was detected in the vocal fremitus. The percussion note was of slightly higher pitch—i.e., impaired—at the right apex, both anteriorly and posteriorly. On

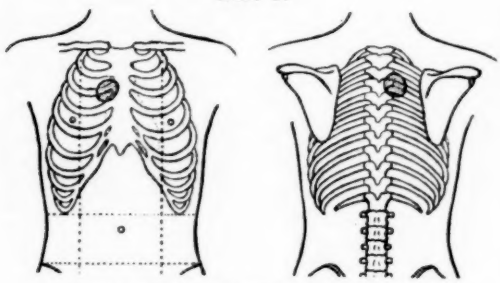
auscultation the breath sounds were heard to be somewhat distant and the expiration a little more prolonged than normal at the right apex. No adventitious sounds were heard. Two *hyperalgesic areas*, one in front and the other posteriorly, were found, each 1½ inches in diameter (Fig. 1). The anterior area was situated over the third interspace close to the sternum, but to the right of the mid-line, and the area at the back was over the fourth rib (or opposite the fourth and fifth dorsal vertebræ), immediately to the right of the spinal column. These areas correspond to part of the cutaneous distribution of the third and fourth dorsal segments of the cord.

No tubercle bacilli were found in the sputum. A radiogram taken on April 30th (the day of the first examination) showed some calcified nodes near the right hilum and a few small opacities in the centre of the right upper lobe.

Three days later the areas of hyperalgesia were still present, and were unaltered in size or position. No further hæmoptysis had occurred. Ten days after the first attendance a small area of hyperalgesia was present in front, but the area at the back had disappeared. Seventeen days after the first attendance she felt very well. She had no cough, only slight expectoration, and no pains in the chest. No areas of hyperalgesia were found.

This case showed segmental hyperalgesia involving the peripheral cutaneous distribution of the third and fourth dorsal segments in inextensive and probably inactive pulmonary tuberculosis of the right upper lobe. The hyperalgesia was situated on the same side of the lesion and lasted for about 14 days after the onset of the hæmoptysis. The calcified nodes near the right hilum with the history of a severe cough five years previously indicate probably that she then had a mild tuberculous lesion about the right hilum which healed by calcification. The hæmoptysis might have been due to the calcified nodes acting as foreign bodies and irritating the bronchial mucous membrane, or alternatively to a fresh and limited extension of the disease of low-grade activity into the right upper lobe. The subsequent history has shown that the lesion is still quiescent and has probably healed without active treatment. In the absence of tubercle bacilli from the sputum, no absolute proof existed, of course, that the pulmonary lesion was tuberculous, but the definite

FIG. 1.



Areas of cutaneous hyperalgesia in Case 1.

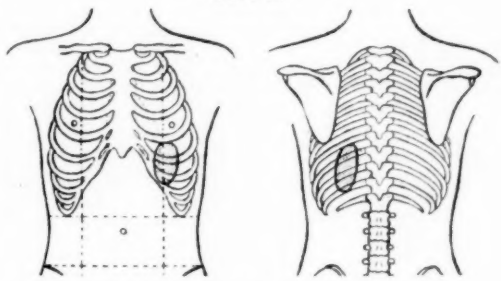
physical and radiological signs taken in conjunction with the segmental hyperalgesia were strongly suggestive that the bleeding originated in a focus in the right lung.

CASE 2. *Simple basal fibrosis with bronchial dilatation.*—A married woman, aged 30, attended St. Thomas's Hospital on April 30th, 1926, and complained of having coughed up a little blood seven days previously, and of pains in the back and front of the left base of the chest. She also complained of having had a cough for one month, with expectoration, some shortness of breath, and slight loss of weight. Her only previous illnesses were a winter cough (bronchitis) for eight years, and measles at 10 years of age. She had had five uneventful confinements. Nothing of note could be gleaned from the family history.

She looked pale and a little wasted. The temperature was 98° F., pulse-rate 76, and the respiration-rate 24. She weighed 8 st. 12 lb. The fingers were not clubbed.

The heart was found displaced 1 inch to the left. The heart sounds, however, were normal and regular, with the exception that the pulmonary second sound was slightly accentuated. The movement of the left side of the chest was diminished, especially at the base, and the percussion note was impaired over the left lung field, but more markedly at the base. On auscultation bronchial breathing was heard at the left base with a few medium crepitations, both inspiratory and expiratory. The vocal resonance and the whispered sounds were accentuated in the same region. Two areas of cutaneous hyperalgesia about 3 inches in diameter were observed, one in front situated over the fifth, sixth, and seventh ribs, and the other posteriorly opposite the eighth, ninth, and tenth dorsal spines (Fig. 2), both areas corresponding to part of the cutaneous distribution of the fifth, sixth, and seventh dorsal segments.

FIG. 2.



Areas of cutaneous hyperalgesia in Case 2.

Each area was 2½ inches from the mid-line of the body. The sputum did not contain tubercle bacilli. A radiogram of the chest showed the heart displaced to the left, and a fairly dense opacity at the left base, confirming the clinical diagnosis of left basal fibrosis.

The patient was seen again on May 3rd (three days later), when the hyperalgesic areas were found to be still present in the same positions, but were a little smaller in extent. She attended again on May 10th, one week later, when she said that she felt much better and that the pain in the back had gone. No further hæmoptysis had occurred. The anterior hyperalgesic area was still present, but was only ½ inch in diameter. The posterior area had disappeared. On May 17th she was seen again, when she said that she had no pains in the chest, no cough, and only a little sputum. No areas of hyperalgesia could be found. The physical signs of left basal fibrosis were still present.

An interesting feature in this case was that the bleeding took place from a cavity due to bronchial dilatation. Head [2] pointed out that in the excavation type of phthisis segmental hyperalgesia did not occur because in all probability in the destruction and excavation of pulmonary tissue the nerve-endings are also destroyed. Consequently, the primary component of the reflex arc is abolished, and afferent impulses can no longer pass to the spinal cord. In my series none of the cases in which the bleeding arose from a tuberculous cavity developed segmental hyperalgesia. But when, as in the above case, the source of the hæmorrhage was in a bronchiectatic cavity or bronchial dilatation, the occurrence of segmental hyperalgesia was fairly common. The explanation appears to be simple. A bronchiectatic cavity is caused by dilatation of a bronchus with no loss of pulmonary tissue, and the nerve-endings remain intact, allowing afferent impulses to pass to the spinal cord and set up cutaneous hyperalgesia.

The position of each hyperalgesic area in this case was 2½ inches from the mid-line, and in the situation of part of the cutaneous distribution of the fifth sixth, and seventh dorsal segments. These features were constantly observed in the other cases where the bleeding took place from bronchial dilatations in the lower lobe of the lung.

CASE 3. *Fibroid tuberculosis involving the extreme apex of the right lung, and also the apical pleura.*—A valet, aged 41, attended St. Thomas's Hospital first on March 10th, 1927, complaining of hæmoptysis which had commenced 28 days previously and had continued for 14 days—i.e., the bleeding ceased 14 days before the patient was first seen. He also

complained of pain and tenderness of the right side of the scalp and neck, commencing with the onset of the hæmoptysis. The pain and tenderness had persisted since, with a subsequent diminution of the scalp pain and tenderness, while that involving the side of the neck had increased. Other symptoms included cough, which he had had for one year, slight expectoration, night sweats, shortness of breath, palpitation, and some loss of weight.

His father and grandmother had both died from pulmonary tuberculosis. At 14 he had an attack of rheumatic fever. In 1921 and 1923 he had attacks of "pleurisy and pneumonia."

His general condition was moderately good, although it was obvious that he had lost a little weight. The temperature was 98·2° F., the pulse-rate 80, and the respiration-rate 26. The weight was 9 st. 11 lb.

The chest was of the long phthinoid type. Wasting of the shoulder girdle muscles, especially of the right trapezius, was observed. The heart was normal in position and function. Flattening and diminution of movement at the right apex was present, together with impairment of the percussion note both anteriorly and posteriorly. The breath sounds at the right apex were bronchovesicular in front, whereas posteriorly they were definitely bronchial* in character. The vocal resonance was increased over this area. A few consonating crepitations were heard at the right apex posteriorly. Over the rest of the lungs the physical signs were normal. An area of cutaneous hyperalgesia was present on the right side of the neck (as shown in the diagram (Fig. 3)), involving part of the skin distribution of the third and fourth cervical segments. The patient stated that at the onset of the hæmoptysis the right side of the forehead and top of the scalp was distinctly tender, but that this tenderness had disappeared at the time of the examination. The sputum examination failed to reveal tubercle bacilli, but X ray examination showed that a small area of old tuberculous disease involved the extreme right apex. No cavitation was visible.

FIG. 3.

The stippled area on the scalp represents the position and comparative extent of hyperalgesia said by the patient to be present at the onset of hæmoptysis. The lower area (shaded) shows the position of the cutaneous hyperalgesia found on examination.

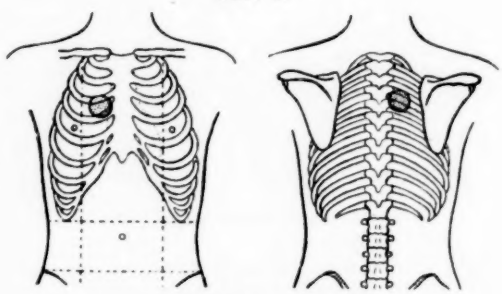
As the patient did not attend again, owing to his having left London shortly after the first attendance, I was unable to trace the subsequent progress.

There is very little doubt that the cause of the hæmoptysis was a fibroid patch of pulmonary tuberculosis at the extreme right apex involving the apical pleura, and that the hyperalgesia of the scalp and neck was associated with the onset of the hæmorrhage. This is the only case of pulmonary disease in which I have found hyperalgesia of the scalp and neck, apart from involvement of the third and fourth cervical areas in cases of diaphragmatic pleurisy. Head [2] and Carmalt-Jones [3] record cases of pulmonary disease in which referred hyperalgesia has affected the cervical segments of the cord, and Head emphasises the frequency with which hyperalgesia of the scalp and shoulder occurs in association with disease of the upper lobes of the lungs. He maintains that the afferent impulses pass by means of the vagus and are referred to the area of cutaneous distribution of the fifth cranial nerve and to the third and fourth cervical segments. It is difficult to understand why affections of the upper lobes only should set up vagal irritation. The vagus, as far as anatomical and physiological evidence shows, is supplied to the whole of the pulmonary parenchyma, and not only to the upper lobes, and on Head's hypothesis it would be expected that irritative affections in all parts of the lung would set up vagal irritation and hyperalgesia of the scalp. A more plausible explanation seems to be that in affections of the upper lobe the phrenic nerve is affected on account of its close anatomical relationship with the apex and the medial surface of the upper lobe, and the afferent impulses setting up referred hyperalgesia in the areas of C. 3 and 4 are conveyed by that nerve. It is difficult to explain the connexion between the phrenic and the trigeminal nerves, but the recent work of Stopford [4 5] on the relationship between the accessory phrenic and the nucleus of the trigeminal, especially the ophthalmic division, appears to offer a reasonable explanation. An attractive hypothesis would be that hyperalgesia of the scalp is only found associated with chest affections in those instances where an accessory phrenic nerve is present. The relative frequencies at least of the two conditions coincide—i.e., they are both rare.

CASE 4. *Recurrent hæmoptysis associated with recurrent segmental hyperalgesia in fibroid tuberculosis of the right upper lobe.*—This patient has been under continuous observation since, as a girl of 20, she first attended the Tuberculosis Department at St. Thomas's Hospital on March 14th, 1923, giving a history of having coughed up a pint of blood three weeks previously, with a second smaller amount one week later. She also complained of morning cough and sputum, pains in the chest, night sweats, shortness of breath, and loss of weight. Four years previously she had tuberculosis of the left knee, which was treated by immobilisation at the Westminster Hospital. Her father had died of pulmonary tuberculosis six years previously.

No definite physical or radiological signs were found, and she was sent for observation to Victoria Park Hospital, to which she was admitted under Dr. Clive Riviere, and where, as resident medical officer, I had an opportunity of observing her. During her stay at the hospital from Jan. 11th to Sept. 7th, 1924 (a period of about eight months) she had a cough, expectoration, recurrent attacks of hæmoptysis, and a variable intermittent fever, rising to 100° F. in the evening. The physical signs in the chest were indefinite with the exception that the percussion note was slightly impaired over the right upper lobe, and the breath sounds over this area were distant. No crepitations were heard. The sputum was negative for tubercle bacilli on more than 30 occasions, but on one occasion a few bacilli were found. This was thought possibly to have been an error. The complement-fixation reaction for tuberculosis was negative and numerous radiographic examinations failed to reveal any definite abnormality in the chest. All the other systems were investigated for a possible cause of the pyrexia without a positive result. For example, blood cultures were persistently sterile, the blood counts normal, and urinary examinations and cultures were negative. The nervous system was normal.

FIG. 4.



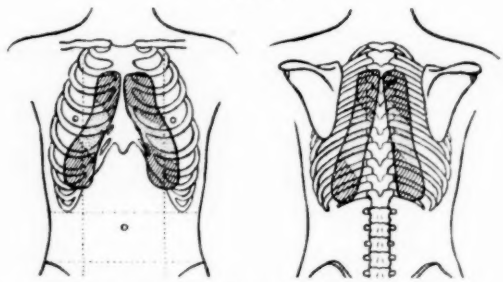
Areas of cutaneous hyperalgesia in Case 4.

* The fact that the breath sounds were bronchial in type does not necessarily mean that cavitation was present. The physical signs of cavitation differ very little from those of consolidation or thickening round a bronchus. In any case bronchial breath sounds are heard in both conditions.

During the whole of this period the patient complained of vague pains in the right side of the chest, which became worse when she had an hæmoptysis. On examination, two areas of cutaneous hyperalgesia were present, one anteriorly near the sternum, and the other posteriorly near the spinal column involving part of the areas supplied by the third and fourth dorsal segments (Fig. 4). These areas gradually became less in extent until about 14 days after the attack of hæmoptysis they disappeared, to reappear when a fresh attack of hæmoptysis occurred. The position of the hyperalgesia was constant on each occasion.

After discharge from Victoria Park Hospital she has attended the Tuberculosis Department at St. Thomas's

FIG. 5.



Areas in which segmental hyperalgesia on the chest wall was found in the present series of cases. The darker areas represent the more common situations (apical and basal).

Hospital, and I have had her under observation up to the present time. She has had many attacks of hæmoptysis at varying intervals, not obviously associated with menstruation, sometimes slight and sometimes so severe as to necessitate her admission to hospital. On each occasion the areas of hyperalgesia have been present involving the third and fourth dorsal segments. Although the patient has many times complained of headache, no hyperalgesia of the scalp or of the cutaneous distribution of the third and fourth cervical segments has been found. Radiographs and physical examination now shows a definite fibroid lesion in the right upper lobe below the apex with traction on the trachea, *but no sign of cavitation*. Tubercle bacilli are now present in the sputum. She frequently complains of dull aching pains in the right side of the chest and in the right shoulder, not made worse by coughing or breathing, but in the intervals between the attacks of hæmoptysis no areas of hyperalgesia are found. The following notes of examinations on four occasions illustrate this point.

(1) May 7th, 1926: Three days after a slight hæmoptysis. Cutaneous hyperalgesia, each area 2 inches in diameter, present on the right anteriorly and posteriorly, involving third and fourth dorsal segments. Complains of dull aching pains in the right upper part of the chest and in the right shoulder, not aggravated by coughing or breathing. The muscles over the right upper half of the chest are slightly tender on deep pressure.

(2) June 4th: Five days after an hæmoptysis. Cutaneous hyperalgesia present in the same areas (½ inch in diameter). Complains of similar pain. An X ray film of the chest at this time shows some fine mottling and fibrosis below the right apex.

(3) Nov. 26th: Four days after an hæmoptysis (½ pint). Cutaneous hyperalgesia present in the same areas. Pain of similar nature still present.

(4) Dec. 12th: No further hæmoptysis. Still complains of pain, although less intense. Cutaneous hyperalgesia not present.

For many months, apart from the recurrent hæmoptysis, no definite clinical, bacteriological, or radiological evidence existed which proved the presence of a tuberculous focus in the lung. In the light of further observation and further experience of similar cases, the constant appearance of segmental hyperalgesia on the right side involving the third and fourth dorsal segments was an early sign pointing to the presence of an inflammatory lesion without cavitation in the right apex.

The disease is of a slowly progressive, fibrotic type, the general condition of the patient having altered very little in the past five years. The lesion in the lung has now been demonstrated clinically by the physical signs, bacteriologically by the presence of tubercle bacilli in the sputum, and radiologically by the presence of mottling in the right upper lobe and by evidence of traction on the upper mediastinum.

Hæmoptysis from a Tuberculous Cavity.—In all cases where the bleeding undoubtedly originated in a tuberculous pulmonary cavity no areas of segmental hyperalgesia were observed. The findings, therefore, coincided with Head's theory of destruction of the nerve-endings and of the consequent obliteration of the first component of the reflex arc. In a few cases, however, a single localised patch of cutaneous hyperalgesia, and sometimes with deep tenderness, was found on the anterior aspect of the chest wall directly over the cavity, and not necessarily associated with hæmoptysis. This single, localised area is an example of the direct or pleural type of hyperalgesia due to the presence over the cavity of pleural adhesions setting up a localised acute or subacute inflammation of the parietal pleura.

Congestive Hæmoptysis.—No areas of segmental hyperalgesia were found in those cases in which it could reasonably be assumed that the hæmoptysis was due to congestion of the lungs, such as in mitral stenosis † and other cardiac conditions; in pressure on the bases of the lungs as, for example, in the later stage of pregnancy; in pulmonary neoplasm, in chronic bronchitis and asthma, and in chronic pulmonary tuberculosis in which, according to Hebert,[6] localised congestion may occur owing to pressure on the pulmonary veins and venules by the contraction of fibrous tissue.

Discussion.

The study of this series of cases, of which the above are examples, has raised many interesting problems, such as the interpretation of the varied reflex phenomena and their paths of transmission, the innervation of the lungs and pleura, and the subjective phenomena of pulmonary disease, but it is not possible in the scope of this paper to enter into a full discussion of them. It may be stated, however, in regard to the presence of segmental hyperalgesia in association with recent hæmoptysis and in the absence of other definite clinical, radiological, and bacteriological evidence, that it may be considered an early sign of a non-excavated inflammatory lesion in the lung. Its connexion with hæmoptysis is, I think, accounted for by the fact that the latter is a very common sign of inflammatory changes in the lungs. Further, it may be stated that the situation of the hyperalgesia definitely indicates the side and site of the lesion. Apical lesions are connected with the third and fourth and occasionally the fifth dorsal segments of the spinal cord, whereas basal lesions are associated with the fifth, sixth, and seventh, and occasionally the eighth dorsal segments. The hyperalgesic areas are invariably situated, both anteriorly and posteriorly, close to the mid-line of the body, but those due to basal lesions are placed about 2½ inches more laterally than the apical areas (Fig. 5).

The association of hæmoptysis and segmental hyperalgesia, as far as I have been able to determine from a study of the literature, has not been previously described.

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† I have noticed the presence of segmental hyperalgesia in a number of cases of mitral disease, not associated with hæmoptysis, but with acute or subacute endocarditis. In these cases the hyperalgesic areas are situated on the left side close to the mid-line of the body, but midway between the apical and basal sites found in pulmonary disease.

PREGNANCY COMPLICATING SIMPLE GOITRE AND GRAVES'S DISEASE.

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THE problems to be discussed in this paper are those of the incidence, results, and effects of pregnancy in simple goitre and Graves's disease. The data have been obtained from a study of the histories of 115 married women suffering from these conditions. Twenty-six were cases of simple goitre and 89 of Graves's disease. Of the latter, 71 may be classified as primary Graves's disease—i.e., patients presenting the classical picture, with diffusely enlarged vascular goitres, eye signs, tremor, tachycardia, and nervousness, in whom symptoms of intoxication had been present from the outset. The remaining 18 were cases of secondary Graves's disease in whom symptoms of intoxication had appeared after some years during which a simple goitre had been present. In these patients the eye signs were usually less prominent and the goitre smaller, harder, and more irregular than in the primary form.

Historical Review.

In the literature there appears to be little information about the incidence and results of pregnancy in patients with simple goitre, though most authorities are agreed that the effect of pregnancy on existing simple goitres is to cause a further enlargement of the gland. The step-like enlargement associated with multiple pregnancies was first described in 1875 by Lawson Tait.[1] Von Graff [2] found a marked increase in volume during pregnancy in 38·5 per cent. of goitrous women. Dock [3] also states that in goitrous areas goitres frequently increase in size during pregnancy, generally diminishing rapidly in the days immediately following.

There is considerably more information as to the incidence, results, and effects of pregnancy in Graves's disease, although there is no general agreement on these problems. Of the earlier studies, those of Seitz[4] in 1913 are valuable; he collected 112 cases of exophthalmic goitre complicated by pregnancy from his own material, from the literature, and from circular letters. His conclusions were as follows. Hyperthyroidism was not affected one way or the other in 40 per cent. of the cases, whilst in a very small number it was improved. On the other hand, 67 out of 112 cases, or 60 per cent. of the total, were made distinctly worse by gestation, and in one-fourth of these there was serious menace to health and even life. Seven patients died, five aborted, and 11 had premature labours. Three miscarriages and three macerated fœtuses were recorded. Crotti[5] (1922) came to the conclusion that the majority of cases of Graves's disease were made worse by pregnancy, and that at any rate it should be regarded as a serious complication. Bram[6] (1922), as a result of extensive clinical observations, formed the opinion that premature expulsion of the uterine contents occurred only in the minority of cases of pregnancy complicating Graves's disease, and that this depended to a great extent on the severity of the disease at the time. Mussey, Plummer, and Boothby[7] (1926) investigated the problems of pregnancy in a large number of cases of exophthalmic goitre and adenomatous goitre with hyperthyroidism. Their figures, however, appear to include only patients who were pregnant at the time of observation, and do not take into account all pregnancies after the onset of the disease. In a series of 5043 cases of exophthalmic goitre they found that only 32 were pregnant. In another series of 2185 cases of adenomatous goitre with hyperthyroidism the incidence of pregnancy was only 10. In the total 7228 cases of the two groups, only 42—i.e., 0·6 per cent.—were pregnant. These incidence figures are considerably lower than those of any other observers, and the explanation appears to be that only patients pregnant at the time of observation were included. Important information, however, is given by these workers as to the effect of these diseases on the course of pregnancy and vice versa. Most of the patients with exophthalmic goitre became pregnant during a period of remission of the disease. Twenty-three patients were delivered normally at full term and all but two of the babies were alive and normal at birth. One of the two was stillborn and the other case untraced. Two patients, on the other hand, aborted, two were delivered prematurely, two were pregnant at the time of observation, and three were untraced. Of the ten women with adenomatous goitre with hyperthyroidism who became pregnant nine were delivered of normal babies. All but one of the mothers had previously had some form of operative treatment on the thyroid gland. Mussey, Plummer, and Boothby finally concluded that the association of pregnancy with these two conditions was a rare one, but that when it did occur the course of pregnancy and the maternal and fœtal mortality were not appreciably affected. They thought also that complications were not more frequent than is usual in either condition alone, and that the course of the disease was not rendered more difficult. The most recent observations on the question of pregnancy as a complication of Graves's disease are those of Hyman and Kessel[8] (1927), who studied a small series of 20 cases of Graves's disease in married women. Nine patients had 12 children; of the latter, one was stillborn and the others normal. This they think is about the average expectancy. Pregnancy, labour, and the puerperium were normal in all. The feature which these authors especially emphasise is the amelioration of the symptoms of Graves's disease which usually occurred during pregnancy. In their cases there was seldom any relapse afterwards.

Simple Goitre.

Of the 26 cases of simple goitre to be discussed, all but two were sporadic. Twelve of these had originated primarily in adolescence and persisted into adult life, while the remaining 14 had developed in adult life. It is remarkable that in all but two of this latter group the goitre developed originally during pregnancy or the puerperium. It would seem, therefore, that simple goitre, developing in adult married women at times other than these, is comparatively rare. Full

TABLE I.—*Effect of Pregnancy on Simple Goitres of Adolescence.*

No.	Age.	Goitre at.	Factors.	Married at.	Pregnancies.	Result.	Effect on goitre.
1	39	14½	F.H. goitre.	38	1 at 38½.	Prem. d. at birth.	Hyp. during.
2	35	15	Pub. 15.	24	4 betw. 25 & 33.	All N.	Steplike hyp.
3	26	16½	,, 15.	23	1 at 24.	N.	Hyp.
4	35	17	,, 17.	21	4 betw. 23 & 28; then 13 misc.	N.	Hyp. with 4th (twin) & subseq.
5	29	8	F.H. goitre.	20	2 at 21 & 25.	N.	Hyp. now. Hytm.
6	45	10	Pub. 15.	25	1 at 29.	N.	?
7	41	12	,, 16.	36	1 at 37.	N.	Hmty. at 30. Hyp. during preg., 37.
8	46	12	Typhoid.	19	3 betw. 22 & 27.	N.	Steplike Hyp.
9	49	10	Pub. 10.	34	2 at 36 & 37; 1 misc. at at 35.	N.	R. hmty., 31. L. hmty., 40. Hytm.
10	30	14	F.H. goitre. Pub. 14.	21	2 at 22 & 26.	N.	Hyp. during 2nd. Hytm.
11	46	16	,, 11.	30	3 betw. 31 & 41.	N.	Hyp. during 3rd. Hytm.
12	32	12	Pub. Mother goitre.*	23	10 betw. 23 & 32.	N. 4; 3 died, 3 misc.	Hyp. with each preg.

* Endemic area. Betw. = between. N. = Normal.
Hyp. = hypertrophy. Hytm. = hypothyroidism.
Hmty. = hemithyroidectomy.

details of the pregnancies and their effect on the course of the disease in these two groups of cases have been summarised in Tables I. and II.

The incidence of pregnancy in the group of cases shown in Table I. is well up to the average. Four of these patients had one child, three had two children, two had three children, and three had four children each. Pregnancy was carried successfully to full term in the majority. There were three instances in which the thyroid condition was perhaps responsible for miscarriages. In the first, Case 4, four healthy children were born, and the fourth pregnancy resulted in twins and was accompanied by a very marked hypertrophy of the thyroid. Subsequently, symptoms of hypothyroidism developed, which were not recognised or treated. This patient became pregnant on 13 occasions during the next seven years, and each time miscarried at the third or fourth month. In the second patient, Case 9, the first pregnancy resulted in miscarriage. She had had a goitre since the age of 10, but a hemithyroidectomy which had been performed just before her marriage had resulted in symptoms of hypothyroidism. As a result of treatment with thyroid extract, she subsequently had two successful pregnancies. In the third instance, Case 12, the history was very similar to that in the first case. There was a strong family history of goitre, and the family lived in a goitrous area. The patient herself developed a goitre at puberty. She married at the age of 23 and gave birth to four healthy children. Six subsequent pregnancies resulted in three stillbirths and three miscarriages. All these pregnancies occurred between the ages of 23 and 32. She had not received any treatment with thyroid extract. In this case it seems probable that the thyroid had become exhausted by repeated pregnancies.

The effect of pregnancy on the goitre was in the majority of cases a further hypertrophy of the gland, and in multiparæ the steplike enlargement which was found by Lawson Tait. In both the patients on whom partial thyroidectomy had been performed before pregnancy occurred there was a recurrence of the goitre during pregnancy. As in the series of cases of goitre developing in married women in adult life, these patients also almost invariably developed symptoms of hypothyroidism in later life.

Incidence, Results, and Effects of Pregnancy in Simple Goitre developing originally in Adult Life.

The details of the 14 patients in this group are given in Table II.

The incidence of subsequent pregnancies in this group of patients can be seen in Table II. Six of the 14 had no subsequent pregnancy, though how far this was the result of the thyroid condition it is impossible to say. It has, however, been frequently noted that thyroid deficiency is often accompanied by sterility, which can be overcome in a certain proportion of patients by treatment with thyroid extract. There is no doubt that a considerable degree of thyroid deficiency was present in the majority of the cases under discussion after their first pregnancy, and from the information which could be obtained it did not appear that they had received adequate treatment with thyroid extract. The remainder, eight, of this group of patients had had subsequent pregnancies, half of them a single pregnancy, three two pregnancies, and one three. This is probably rather below the average expectancy.

The development of goitre during pregnancy did not appear to have any harmful effect on pregnancy, for in every patient in whom it occurred the pregnancy during which the goitre started was successfully carried to term. In these patients also, all subsequent pregnancies were successfully completed.

The effect of pregnancy on the goitre was in nearly every case the same—i.e., a further hypertrophy of the gland. In later years the majority of these individuals developed well-marked symptoms of hypothyroidism. There is one instance, however, Case 2 in Table III., of a goitre which was apparently unable to hypertrophy. In this patient definite symptoms of myxœdema developed after the puerperium. As a result of treatment with thyroid extract these symptoms disappeared, and two years later a further pregnancy occurred and was carried to full term with complete success.

TABLE II.—*Simple Goitre Developing in Adult Life.*

(A) *During Pregnancy.*

No.	Age.	During which pregnancy.	Result.	Subseq. preg.	Result.	Effect on goitre.	Ultimate result.
1	50	1st at 36.	N.	None.	—	—	Further hyp. at menop.
2	50	11th at 45.	N.	,,	—	—	Further hyp. at menop. with hytm.
3	38	1st at 25.	N.	2 at 27 & 35.	N.	Hyp.	—
*4	28	1st at 24	N.	2 subseq.	N.	Hyp. with each.	Hytm.
5	32	1st at 24.	N.	3 at 26, 28 & 30.	N.	,,	,,

(B) *During the Puerperium.*

No.	Age.	During which pregnancy.	Result.	Subseq. preg.	Result.	Effect on goitre.	Ultimate result.
6	42	2nd at 25.	N.	None.	—	—	Hmty.; pressure.
7	38	3rd at 33.	N.	1 subseq.	N.	No alteration.	No symp.
8	32	1st at 23.	N.	1 at 30.	N.	Hyp.	—
9	51	7th at 40.	N.	None.	—	—	Hytm.
10	34	1st at 32.	N.	,,	—	—	—
11	31	1st at 28.	N.	,,	—	—	Hytm. B.M.R. —26".
12	34	1st at 28.	N.	1 at 33.	N.	Hyp.	Hytm.

(C) *At other times.*

No.	Age.	Goitre at—	Factors.	Pregnancies.	Result.	Effect on goitre.	Ultimate result.
13	31	27	Endemic.	1 at 30.	N.	Hyp. during.	—
14	43	21	?	2 at 32 & 35.	N.	Myx. after 1st preg.	Myx. Treated with thyroid before 2nd.

* F.H. goitre. Myx. = Myxœdema. Menop. = Menopause.

Primary Graves's Disease.

The disease in eight of the 71 cases of primary Graves's disease originally developed during pregnancy. In six this had no adverse effect on the pregnancy, which pursued a normal course to full term. In the seventh patient, although the pregnancy was carried to full term, the child was stillborn. The eighth patient miscarried at three months, very shortly after the onset of the disease. It may be concluded, therefore, that primary Graves's disease developing during pregnancy in the majority of cases—in this instance 75 per cent.—does not materially affect the course of pregnancy.

In 40, or 56·3 per cent. of the 71, the patient was first seen within two years of the onset of the disease, during which time there had been little possibility of a subsequent pregnancy. The majority were either in hospital or under active medical supervision for the greater part of this time. These cases, therefore, can be eliminated from the discussion. Details of the remaining 31 patients (43·7 per cent.) are given in Table III. In these cases an interval of two years or more had elapsed since the onset of the disease.

From Table III. it can be seen that pregnancies occurred in 17, or 54·8 per cent., of the 31 cases in which the interval of time after the onset of the disease was sufficiently long to have made it a possibility. In spite of the fact that a relatively high

proportion of patients (54·8 per cent.) became pregnant after the onset of the disease, there are few instances of more than one pregnancy occurring—only four in this series. One of these women had three normal children, two had two miscarriages, and the other, after a stillborn child followed by a miscarriage, ultimately had a normal and successful pregnancy.

TABLE III.

No.	Age.	Duration ex. goitre in years.	Subseq. preg.	Result of preg.	Date of preg. after onset of Graves's disease.
1	37	3	0	—	—
2	43	15	0	—	—
3	36	7	1	N.	Within 2 yrs.
4	38	8	1	N.	,, 1 yr.
5	34	4	3	(1) Full-term stillbirth.	,, 2 yrs.
				(2) Misc. 3/12.	,, 2½ yrs.
				(3) N.	,, 3½ yrs.
6	45	19	0	—	—
7	35	5	1	N.	,, 5 yrs.
8	37	3	0	N.	—
9	26	3	1	—	—
10	44	5	2	Misc. 6/12.	,, 3 yrs.
11	53	16	0	(1) Misc. 2/12.	,, 3 yrs.
				(2) ,, 4/12.	,, 4 yrs.
12	56	?	3	(1) N.	?
				(2) N.	?
				(3) N.	?
13	48	?	1	Misc. at 5/12.	Within 5 yrs.
14	42	6	1	N.	,, 2 yrs.
15	48	9	0	—	—
16	24	2	1	Pregnant at time of obs.	Within 2 yrs.
17	41	?	0	—	—
18	42	4	0	—	—
19	32	3	0	—	—
20	29	4	0	—	—
21	28	2	2	(1) Misc. at 5/12.	Within 2 yrs.
				(2) Misc. at 3/12.	,, 2 yrs.
22	42	5	1	Misc. at 3/12.	,, 4 yrs.
23	28	7	1	N.	,, 6 yrs.
24	43	11	0	—	—
25	39	8	0	—	—
26	36	5	1	Born dead.	Within 5 yrs.
27	36	5	1	Misc.	,, 4 yrs.
28	41	13	0	—	—
29	54	14	1	N.	Within 2 yrs.
30	29	2	1	Prem. 7/12.	,, 2 yrs.
31	55	20	0	—	—

The Effect on Each Other of Graves's Disease and Pregnancy.

A summary of the results of pregnancy (also given in Table III.) in the 17 cases in which it occurred shows that out of a total of 23 pregnancies 10 were completed normally. On the other hand, there were nine miscarriages, one premature birth, and two full-term stillborn children, while one patient was pregnant at the time of observation. To put this in slightly different form, rather more than half—54·5 per cent.—of the pregnancies were unsuccessful, miscarriage and premature expulsion of the uterine contents generally occurring. The early stages of pregnancy appear to be slightly more dangerous than the later, for the majority of the miscarriages occurred in the first four months. From the present observations it does not seem possible to obtain any guide to the prognosis of pregnancy in any individual case. The result appears to depend more on the severity of the disease at the time of pregnancy than on the length of time during which the patient has suffered from it. Although five normal pregnancies occurred in patients who had suffered from the disease for a short period—three years or less—the number of unsuccessful pregnancies in these early cases was somewhat greater. Miscarriages were also more common in the patients who had suffered from the disease for a longer time. Unfortunately, no information was available as to the dates of the three normal pregnancies in relation to the onset of the disease in Case 12, so that they could not be included. Taken as a whole, however, my experience does not indicate that the length of time the patient has suffered from the disease has any relationship to the prognosis of pregnancy.

It has frequently been observed that the symptoms of Graves's disease improve during pregnancy. Hyman and Kessel,[8] for instance, found an amelioration in their series, and many did not relapse afterwards. Mussey, Plummer, and Boothby[7] thought that the course of the disease was not adversely affected. The details of the effect of pregnancy on the disease in the present series, where the information was available, have been summarised in Table IV.

TABLE IV.

Symptoms improved—		
During and after.	During, but relapsed after.	During; hypothyroidism after.
8.	9.	2.
Stillbirth (F.T.).	Normal.	Normal.
Normal.	,,	,,
,,	Misc. 3/12.	—
,,	,, 6/12.	—
,,	Normal.†	—
Misc. 3/12.	Premature 7/12.	—
Normal.	,, 7/12.	—
Misc.*	Misc. 5/12.	—
	Stillbirth (F.T.).	

* Previously treated by X rays.
† Relapsed owing to illness of child.

In no instance were the symptoms exaggerated during pregnancy. In eight patients, 42 per cent., an improvement occurred during pregnancy without any subsequent relapse, whilst in nine patients, 47 per cent., the improvement was not maintained. In two women an improvement during pregnancy was followed by hypothyroidism. If these two cases are included with those of the first group, it can be concluded that in about half the patients the improvement in the symptoms of the disease which occurred during pregnancy was more or less permanent, whilst in the other half there was a relapse. To some extent this question of permanent improvement or relapse seems to depend on successful termination of the pregnancy. This is shown in Table IV. Unfortunately, information was only available in 19 of the 23 pregnancies. In the first column of this table, where improvement was maintained, there is a higher percentage of normal pregnancies than in the second column, where it was not, the actual proportion of normals being 62 per cent. in the first column as against 33 per cent. in the second. To some extent psychological factors appear to be responsible for the relapse for, in the patients who miscarry or in whom the pregnancy is not successfully terminated, anxiety and disappointment at the turn of events are often advanced as the reasons for the deterioration. In others, the relapse may be due to anxiety over the subsequent illness of the child, an instance of which is seen in one of the cases in the second column of the table, where the actual pregnancy was successfully completed. There can be little doubt from these figures that an exacerbation of symptoms is particularly likely to occur after miscarriage, but is not so common after a full term and successful pregnancy.

A good individual instance of this is the following patient who had repeated miscarriages and ultimately a successful pregnancy. In the first place she miscarried at three months, shortly after the onset of the disease, whereupon the symptoms gradually became worse. Under treatment, however, during the next six months, her condition improved. About this time she again became pregnant, and during pregnancy the symptoms of Graves's disease, including the exophthalmos and goitre, entirely disappeared. The pregnancy continued satisfactorily to full term, but the child was stillborn. There was no return of the symptoms of Graves's disease after childbirth. Four months later the patient again became pregnant and on this occasion miscarried at nine weeks. As a result of this, all the symptoms of Graves's disease returned, and a few months later her basal metabolic rate was found to be +59 per cent., indicating a fairly severe intoxication. During the ensuing year she improved under medical care and treatment, and at the end of this time she again became pregnant. Again the

symptoms of Graves's disease entirely cleared up during pregnancy. At the fourth month her basal metabolic rate was normal (+5 per cent.). Pregnancy was carried successfully to full term and a normal, healthy child was born. One year after this pregnancy there had been no return of the symptoms of Graves's disease. The interesting features of this case are the improvement in the symptoms during pregnancy and their exacerbation after miscarriage, also the permanent improvement when the final pregnancy was carried successfully to full term.

The exacerbations after miscarriage could no doubt to a large extent be attributed to the mental condition of the patient, though it seems more than probable that other factors play a part in this phenomenon. It might, for instance, be suggested that when miscarriage occurs the normal involution and readjustment of glandular functions does not take place in the way that it appears to do when pregnancy is successfully completed.

An improvement in the symptoms was almost invariably noted during pregnancy. This improvement was generally maintained afterwards if the pregnancy was successfully carried to term. The most important factors in producing a satisfactory result seem to have been absence of mental stress and anxiety and adequate rest and treatment during pregnancy. When these conditions were fulfilled, the results were comparable to those of Hyman and Kessel. An amelioration in the symptoms during pregnancy was not followed by relapse afterwards. Unfortunately, in about half the cases in the present series these conditions were not attained.

Secondary Graves's Disease.

Of the 18 cases of secondary Graves's disease the primary simple goitre in 11 had persisted from adolescence, whilst in seven it had originated in adult life. The majority of the adolescent goitres first appeared about the time of puberty. In three of the adults the goitre originated during pregnancy. In a few cases there was a strong family history of goitre, but in only one instance had the patient lived in a goitrous area. The histories suggest that before the onset of thyrotoxic symptoms the goitres were in every way comparable with those already described in the section dealing with simple goitre. Before the onset of thyrotoxic symptoms the incidence of pregnancy was approximately the same as in the cases of simple goitre; pregnancies occurred in 61 per cent., whilst in the remainder, 39 per cent., there was sterility. Secondary thyrotoxic symptoms developed usually between the ages of 27 and 42; the exciting factors were shock, mental stress or sepsis, alone or in combination. There were no instances of secondary thyrotoxic symptoms developing during pregnancy or the puerperium, an observation of some interest when it is considered how frequently primary Graves's disease develops during these periods.

Pregnancy after the onset of thyrotoxic symptoms was rare in the present series. It must be pointed out, however, that in nine, or 50 per cent. of these patients, when they came under observation, the interval of time which had elapsed after the onset of thyrotoxic symptoms was insufficient to have permitted a subsequent pregnancy. The details of the pregnancies in the remaining nine cases are given in Table V.

TABLE V.

No.	Age.	Secondary Graves's disease at–	Interval of time elapsed in years.	Pregnancies.	Result.
1	63	42	21	0	—
2	28	20	8	0	—
3	53	36	17	0	—
4	45	35	10	1	N. F.T.
5	39	36	3	0	—
6	37	28	9	0	—
7	53	36	17	0	—
8	45	28	17	2 at 33 & 36.	N. F.T.* N. F.T.*
9	37	34	3	0	—

* Both marasmic and died shortly after birth.

Pregnancies occurred in only two of these nine patients after the onset of thyrotoxic symptoms. One had two normal pregnancies and the other had one. In the former case both children were marasmic and died shortly after birth. In this patient the symptoms of the disease were very considerably exaggerated as a result of pregnancy, an indication of which was a basal metabolic rate of +81·7 per cent. shortly after parturition. In the other patient an exaggeration of the symptoms of the disease was pronounced one year after pregnancy.

Summary and Discussion.

The presence of a persistent simple adolescent goitre does not appear to affect the normal incidence of pregnancy, which in the group of cases under investigation was well up to the average. The expectancy of pregnancy in these cases was also practically normal, though there were several instances of a series of miscarriages following repeated pregnancies in patients whose thyroid condition had been untreated and in whom there were definite signs of hypothyroidism. The effect of pregnancy on the goitre in these "primarily adolescent" cases was in almost every instance the same—i.e., a further hypertrophy of the gland. In spite of this, most of these patients developed well-marked signs of hypothyroidism in later life.

The incidence of pregnancy in the group of patients who developed a simple goitre in adult life was below the average expectancy; in fact, only about 50 per cent. of them became pregnant at all. No harmful effect was noted on the pregnancy in any of these "adult" cases, though it was usually associated with a further hypertrophy of the gland, and later with well-marked symptoms of hypothyroidism.

Pregnancy as an event complicating primary Graves's disease occurred in about half the cases in which it was possible, but more than one pregnancy after the onset of the disease was comparatively rare. The results of pregnancy in these cases were poor, for there was an unsuccessful termination by miscarriage or premature birth in about 50 per cent. During pregnancy there was almost invariably an amelioration of the symptoms. In about 50 per cent. of cases this improvement was maintained afterwards.

The incidence of pregnancy in secondary Graves's disease was low, only two instances occurring out of nine cases in which it was possible. The results of pregnancy and the effects on the subsequent course of the disease were unsatisfactory, but the number of cases in this group was too few for definite conclusions.

The practical bearing of these facts appears to be as follows: A patient with a simple goitre, whether it originally develops in adolescence or in adult life, may be safely advised to entertain the prospect of pregnancy. The thyroid condition, however, should be treated by some form of thyroid extract, both during and after the event. If this is not done, although the prospects of a successful pregnancy do not appear to be decreased except in those patients who have already borne several children, a further hypertrophy of the gland is almost certain to occur, and symptoms of hypothyroidism will usually develop in later life, in a few cases fairly rapidly after pregnancy. The problem of pregnancy in Graves's disease is more complicated. The incidence figures in the present series of cases agree fairly closely with those of Seitz, but differ considerably from those of Hyman and Kessel, and Mussey, Plummer, and Boothby. These latter authors came to the conclusion that the association of pregnancy with exophthalmic goitre and adenomatous goitre with hyperthyroidism was rare (0·6 per cent.), but that when it did occur the course of pregnancy and the fœtal mortality were not appreciably affected. In the present series of primary Graves's disease the incidence of pregnancy was 50 per cent. of the possible cases. The discrepancy in

these observations is, therefore, considerable. The most probable explanation of the difference appears to be that while Mussey, Plummer, and Boothby based their calculations on the number of patients who were actually pregnant at the time of observation, in the present series of cases the details of all pregnancies, past and present, occurring after the onset of the disease, have been taken into consideration. This method appears to give more reliable incidence figures.

There is a difference also in the "results" of pregnancy in these investigations. Hyman and Kessel, and Mussey, Plummer, and Boothby found that they were well up to the average. The present results, on the other hand, agree more closely with the earlier one of Seitz. His statistics were collected from cases of his own, from the literature and from circular letters, and it is probable that they refer to a period before the extensive use of iodisation and surgical operation in the treatment of Graves's disease. This is also true of many of the present cases. It is possible, therefore, that this may account for the variation. To a large extent the poor results of pregnancy in the present series—miscarriage or premature birth in 50 per cent.—may be attributed to shocks, mental stress, and inadequate rest and treatment, for where satisfactory conditions were attained and mental stress was absent the results were generally good. The importance of taking every precaution to ensure a full term pregnancy in patients with Graves's disease cannot be overestimated. From this point of view the results in the present series are of considerable interest. In nearly every case an improvement in the symptoms of the disease was noted during pregnancy, this observation being in agreement with the findings of Hyman and Kessel, whilst the question of permanent improvement or not seemed to depend on whether the pregnancy was successfully completed or prematurely terminated. In the cases which relapsed after pregnancy there was more often than not a history of miscarriage or premature birth. On the other hand, when the pregnancy was carried to a successful termination, the improvement in the symptoms was generally maintained. It seems, therefore, that the prospect of pregnancy may be entertained by a patient suffering from primary Graves's disease if circumstances are favourable and previous treatment adequate, the degree of intoxication not too great, and cardiac and other complications absent. Under such circumstances there seems to be a good chance of pregnancy being carried to term, in which case there is an equally good chance of the disease being permanently benefited. The outlook in secondary Graves's disease, on the other hand, as judged by the few instances of pregnancy in the present series of cases, does not appear to be so satisfactory.

I wish to thank Prof. MacLean, the Director of the Medical Unit, the members of the staff of St. Thomas's Hospital, and the Medical Research Council for the facilities which enabled me to carry out this investigation.

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THE "STIGMA OF PAUPERISM."—To prevent "any stigma of any kind suggesting itself to the mind of anyone making use of poor-law institutions" the Ministry of Health has sanctioned the alteration of the name of the Walsall Workhouse Infirmary to "The Manor Hospital"; the workhouse itself is to be called "Beacon Lodge." The Ministry has also approved of the appointment of a consultant physician and a consultant surgeon to avoid sending special cases to Birmingham.

LYMPHOMATA OF THE ORBIT.

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THE recent article on chloroma by Ashby and Smith in THE LANCET (1928, i., 1169) stimulated me to make a survey of the records of this hospital since 1915 (inclusive) in order to pick out the various conditions of the orbit which might conveniently be called lymphomata. I had previously formed the opinion that lymphomata (lymphocytoma or lymphoblastoma) of one sort or another, although actually rare, are relatively among the commonest neoplasms of this region, if the term neoplasm include nodular collections of lymphoid tissue occurring without any relation to other definitely recognisable pathological changes. A benign localised lymphomatous aggregation (e.g., a flattened mass under the bulbar conjunctiva) is not usually regarded as a neoplasm, but my use of the term is convenient and will be clear.

Two true neoplastic conditions are outstandingly frequent in this district—namely, epithelioma arising in connexion with the lids or limbus, and retinoblastoma (glioma or neuro-epithelioma), which has usually extended to the orbit before the patient comes to hospital. The figures for epithelioma and retinoblastoma during the past eight and a half years were 35 and 23 respectively. During this period I personally examined the cases and the orbital tissues removed for diagnosis. The 23 cases tabulated below represent approximately 250,000 out-patients in 13½ years.

The *bilateral* conditions may conveniently be considered in the following groups: (*a*) as an affection involving primarily the lacrymal glands (in so far as the orbit is concerned), and (*b*) as an affection not necessarily involving the lacrymal glands, or involving them secondarily in addition to other parts of the orbit.

Lane,[1] who has made a most extensive study of the literature dealing with lacrymal gland tumours, places them in three divisions: (1) the true neoplasms (mixed tumour, carcinoma, &c.); (2) cysts; (3) symmetrical tumour-like enlargements due to Mikulicz's syndrome or lymphomata as these enlargements are often called. These are not true tumour growths, but a syndrome of unknown ætiology.

Four types of this third division are described in the literature:—

Type 1 is Mikulicz's disease or syndrome proper, in which there is a bilateral lymphomatous enlargement of the lacrymal glands, together with enlargement of one or more of the salivary glands without characteristic blood changes, usually of favourable prognosis, but capable of passing into Type 3.

Type 2.—Bilateral lymphomatous enlargement of the lacrymal glands, without salivary gland enlargement, but with lymphatic glandular enlargements elsewhere, possibly also with blood changes which have not the characteristics of a leukæmia. This is a pseudo-leukæmia, of favourable prognosis as a rule, but it may pass over into Type 3.

Type 3.—Bilateral enlargement of the lacrymal glands and possibly (but not necessarily) also of salivary glands, lymph glands, liver, and spleen, associated with a profound leukæmia either of a lymphocytic or myelocytic type, invariably fatal.

Type 4.—A bilateral lymphomatous condition of the lacrymal glands associated with hyperplasia of the gland itself, the lymphoid elements merely increasing pari passu with the epithelial elements.

The above grouping is, with minor differences, that given by Lane, who points out the much greater frequency of the conditions included under Division 3 as compared with the true neoplasms and cysts. This relative frequency is also apparent in my survey. I shall not attempt to detail the various true neoplasms that I have met with in connexion with the lacrymal gland; they are few compared with the lymphomatous conditions.

Cases recorded from this hospital prior to 1915 coming under division 3 are included in Lane's

bibliography. Since then all our cases as tabulated below are recorded,[2] except two of which the notes are now given.

CASE 1 (*Group (a), Type 1*).—Male Hindu, aged 26, was admitted on April 7th, 1928. There was proptosis of both eyes and exposure keratitis; the left cornea was ulcerated below and there was considerable conjunctival discharge. The pupils were active, but the movements of the eyeballs were restricted in all directions. The condition had lasted a month. Fundus examination showed hyperæmia and slight swelling of the right optic disc with an indistinct nasal margin. No fundus view of the left eye could be obtained owing to corneal ulceration and œdema: Right eye vision = fingers at 4 metres; left eye vision = fingers at 2 metres. The patient was very emaciated and anæmic, with coated tongue and marked pyorrhœa alveolaris. The liver was enlarged and the spleen normal. The patient was pigeon-breasted, had some dyspnœa, with wheezing respirations more frequent than normal, dullness over the right lung, slight dullness over the left base, and diminished breath sounds all over. Vocal resonance was increased on the right side.

Both lacrymal glands were enlarged as was also the right preauricular and the posterior cervical glands, as well as the parotid and submaxillary salivary glands on either side. The urine was normal. No ova of intestinal parasites were found and the Wassermann was negative. The blood count was as follows: red cells, 3,587,500 per c.mm.; white cells, 5625 per c.mm.; polymorphonuclear leucocytes, 44 per cent.; large mononuclear leucocytes, 10 per cent.; lymphocytes, 40 per cent.; eosinophils, 2 per cent.; basophils, 2 per cent.; transitional forms, 2 per cent.; hæmoglobin, 57 per cent.

Tarsorrhaphy of both eyes was done on April 7th and the patient was transferred to the General Hospital for nursing on April 14th. On May 3rd he returned with the mouth, eyes, and chest much improved. On May 5th a 12·5 mg. radium needle was inserted deep in the lacrymal gland mass on either side, parallel with the roof of the orbit. These were removed after 26 hours (325 mg. hours). A blood count on May 12th showed: red cells, 4,500,000 per c.mm.; white cells, 6250 per c.mm.; polymorphonuclear leucocytes, 50 per cent.; mononuclear leucocytes, 26 per cent.; lymphocytes, 20 per cent.; eosinophils, 4 per cent.; hæmoglobin, 70 per cent. On May 25th the orbital masses were markedly diminished; that on the right side could not be palpated, the left was just palpable. The right parotid was not so large, but the submaxillary glands were much the same. A piece of tissue removed for pathological examination on May 27th showed the Mikulicz picture considerably altered, marked fibroblastic changes having supervened. The lid adhesions were divided; the corneæ and conjunctivæ were healthy. On discharge next day: R.E.V. = 6/24 N.I.G.; L.E.V. = 6/36 N.I.G.

Radium rapidly reduced the size of the lacrymal growths. In two previous cases of this type the enlargements were reduced by X rays.

CASE 2 (*Group (a), Type 3*), *bilateral enlargement of lacrymal glands with leukæmia*, was an Indian girl of 7, who attended on May 28th, 1927, with proptosis of both eyes. The right cornea was ulcerated. It was said that the bulging had only been noticed for 20 days. A tumour mass was felt on either side between the eyeball and the orbital rim, that on the right being larger. The child had fever of a low type and was anæmic. No other glands were involved; the spleen and liver were normal. The blood showed: red cells, 4,760,000 per c.mm.; white cells, 24,375 per c.mm.; polymorphonuclear leucocytes, 24 per cent.; large lymphocytes (mononuclear), 44 per cent.; small lymphocytes, 13 per cent.; neutrophil myelocytes, 16 per cent., eosinophil myelocytes, 3 per cent.; hæmoglobin, 46·65 per cent. The Wassermann was negative. The urine contained 0·5 per cent. of albumin. A few of the monocytes contained rod-shaped bodies staining red with Leishman's stain. The patient was not treated, was discharged at request, and died.

The cases of this type had certain points in common. They were all fatal and organic arsenic did not appear to influence the condition. The blood picture varied from myelocytic to lymphocytic. The rod-shaped bodies in the monocytes were previously described[3]; blood cultures in this case, both at blood heat and in the cold incubator, were negative, and Colonel R. Knowles considered the inclusions non-organismal. Hudson does not mention them.[4]

A practical point worth noting is that in most cases either of Type 1. or Type 3 exposure of the cornea is an urgent condition calling for prompt relief, for it dries and eventually ulcerates from exophthalmos and lack of lacrymal secretion. Tarsorrhaphy is a simple and efficient method of preventing loss of the eye from this cause. It gives time for treatment either by radiation or operation, and in the latter event diminishes the risk of sepsis in the dead space. As in the case described above, the lids may be opened after diminution of exophthalmos and before discharge of the patient. It seems reasonable to presume that all lymphomata not associated with leukæmia are radio-sensitive. Anyhow, X rays or radium would be well worth trying in lymphomatous conditions suspected or verified by the removal of a portion before extirpation.

Affections not Necessarily Involving the Lacrymal Glands.

There appears to be only one case in our records suitably included under Group (*b*). This was originally recorded by Colonel H. Kirkpatrick in 1916[5] as bilateral sarcoma. The neoplastic masses were at first most prominent in the lower part of the orbit. That it was not a true sarcoma was proved by the later history. In 1922 the case came under my care again and an exenteration of the left orbit was necessitated.[2] Apparently by this time the process had involved the lacrymal glands in addition to all the other structures of the orbit. There was recurrence in the socket, but it was controlled by X rays. No further development took place on this side, and on the right the condition apparently subsided altogether. Here the condition was a bilateral lymphoblastoma of a benign type, not necessarily affecting the lacrymal gland except by extension. It might be classified as: Group (*b*), Type 1, which might also include such bilateral lymphoblastomatous conditions as described by McAll.[6] I have seen two like the first case published by Bedell,[7] but bilateral. They showed lymphomatous masses under the bulbar conjunctiva, rather resembling pieces of smoked salmon, which extended backwards into the orbit over the muscle insertions.

Chloromata affecting the orbit might be placed in Group (*b*), Type 2. Those recently recorded by Ashby and Smith[8] and Cohen,[9] for example, show affinities with Group (*a*), Type 3, above. They have the common characteristics of a rapidly fatal leukæmia appearing in children. They differ in the type of orbital involvement and the colour of the new-formed tissue. The nature of the cells in the masses is chiefly myelocytic, but apparently may be lymphocytic, in which case the orbital involvement would be lymphoblastic. In chloromata there are bony foci which are not met with in Class (*a*), Type 3. I have not seen a case of chloroma in this hospital, but the literature suggests that the lacrymal gland was sometimes secondarily involved.

A third type is discrete lymphomatous invasion of all the tissues of the orbit by small isolated nodes, as described by Coats.[10] I have seen one example which has not been reported up to now and may be briefly referred to.

CASE 3.—A female Hindu, aged 40, came under my care in June, 1925, with a proptosis of the right eye of 25 mm. The left orbit had been exenterated in this hospital eight years before. On looking up the old records and examining sections of the tissues it appeared that after the exenteration no tumour had been discoverable, but there had been discrete lymph nodes throughout the whole orbit, as in Coats's case. These had been frequently related to vessels which appeared to be unduly prominent in the tissues. Blood examination had been negative and there was no record of the fundus appearances. When I saw the woman she said that the right eye had begun to bulge a year before. Vision was 6/6. There was some œdema of the disc and dilatation and humping of the vessels. The Wassermann was negative and the blood normal. There was mitral regurgitation. The thyroid was slightly enlarged. The physicians did not consider that there was Graves's disease, but there was a doubtful lesion (? tumour—not aneurysmal) of the upper mediastinum. The cornea was protected by tarsorrhaphy, and the woman took her discharge.

Unilateral Lymphoma.

The unilateral lymphomata of the orbit may similarly be considered in two groups: (*a*) an affection involving primarily the lacrymal gland, and (*b*) an affection not necessarily involving the lacrymal

gland or involving it secondarily. The lacrymal gland is one of the main sites of distribution of normal lymphoid tissue in the orbit. It may therefore be significant to remember that small isolated portions of lacrymal gland tissue may occur all round the upper fornix, in the tarsus, and even round the lower fornix, and that phylogenetically the gland mass has migrated to its present site from below temporalwards and upwards.

In Group (*a*) there are three types: (1) an enlargement of the gland of the Mikulicz type with salivary gland changes, (2) a hyperplasia of the gland with simultaneous increase of lymphoid tissue, and (3) a lymphomatous condition arising in the gland without enlargement of salivary glands or lymph glands, and without evidence of pseudo-leukæmia or leukæmia, such as the case recorded by Pfingst.[11] Of this type I had an excellent example this year. The large lymphoid mass caused marked displacement of the globe. The cornea was saved by a tarsorrhaphy and the mass reduced by partial excision and subsequent X ray treatment. Presumably such a condition may pass over into one of the bilateral types such as (*a*), 1, 2, or 3, but Pfingst's case showed no change three years after discharge from hospital.

In Group (*b*) may be included lymphomatous masses of any sort in the orbit, whether starting under the bulbar conjunctiva (e.g., the first case recorded by Bedell)[8] under the palpebral conjunctiva, or deeper in the orbit.

Bilateral.

(*a*)	(*b*)
Type 1.	One case (1916).
Five cases Mikulicz's syndrome. 1922, 1923, 1924, 1925*, 1928	
Type 2. Nil.	Nil. (Chloroma.)
Type 3.	One case (1925). Discrete lymphomatous infiltration (Coats).
Five cases leukæmia 1918, 1920, 1922, 1926, 1927	
Type 4. Three cases hyperplasia.	

* Not recorded in detail except in our laboratary records.

Unilateral.

(*a*)	(*b*)
Type 1. One case (Mikulicz) (1926).	Five cases: One each— Extending from neighbourhood of plica. Extending underneath the bulbar conjunctiva and backward. Extending from upper lid. Main mass in inferior temporal region of orbit. Main mass just below brow.
Type 2. Nil. (It is thought that an example occurred, but the notes cannot be traced).	
Type 3. Two cases 1922, 1928	

Two of the bilateral cases of Type 3 (*a*) showed a blood picture indistinguishable from myelogenous leukæmia. Coats[10] states that in myelogenous leukæmia local tumours are rare and do not appear to have been recorded in the orbit. In making this statement he must have considered that the leukæmia met with in bilateral lymphoblastoma of the lacrymal gland is not truly myelogenous. Inflammatory aggregations of lymphoid granulation tissue have been excluded and also localised infiltrations confined to the palpebral conjunctiva and lids. There is no doubt that other cases presenting themselves at the out-patient department might have been added to the 20 here tabulated had they been accurately written up. This may seem a very small number when one considers the approximate number of out-patients during the period which the survey covers, but although actually rare apparently these conditions come third in frequency amongst the orbital growths in this part of the world.

I have to thank the various members of the staff for their assistance, more particularly Dr. Kandaswami Pillay for his great help both in the laboratory and in the verification and assembling of records.

(*Continued at foot of next column.*)

ESTIMATIONS OF LEAD IN TISSUES

OF LEAD-TREATED PATIENTS AND ANIMALS.*

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THE lead treatment of cancer has made it desirable to obtain information about the distribution of intravenously injected lead preparations among the tissues of the patient. Such information is of toxicological importance, and should be significant in determining the manner and kind of lead treatment as well as the auxiliary measures to be adopted—for example, the subsequent elimination of the lead. Little information on this subject is available. In most of the experimental work on animals discussed by Aub *et al*[1] the lead was introduced otherwise than intravenously, and the information obtained was sufficient to show that the mode of introduction of lead has a considerable influence on its distribution. N. Waterman[3] gives the results of lead estimations made on the tissues of one lead-treated cancer patient, obtained post mortem. While the tumour contained 102 parts per million of lead, the organs contained much less, the spleen showing the highest content with 55, followed by liver, bone, lung, and kidney. The drug employed was apparently similar to the electrically-prepared colloid used by us. In three cases of Rous fowl sarcoma treated by the same author with lead undecylate, although the treatment retarded the progress of the disease, the results are not quite so definitely in favour of the original tumour having the highest lead-content of any tissue. The ovary showed in one case the highest lead-content of any observed in the series. Apart from this, either the original tumour or the lung (when there were pulmonary metastases) contained the largest quantity of lead. Moreover, Waterman found that tumours treated with lead in vivo were not so readily transplanted as untreated neoplasms.

The present paper records findings concerning the lead-content of normal and neoplastic tissues after treatment with lead. These are rather fragmentary but should be of some value; so far as they go, they lend support to the view that the lead-content of malignant tissue is higher after treatment than

* This investigation was undertaken on behalf of the Liverpool Medical Research Organisation.

LIEUT.-COLONEL WRIGHT: REFERENCES.

(*Continued from previous column.*)

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that of normal tissues from the same subject. Two experiments are also reported in which cats heavily treated with lead were killed a few hours later. They provide information on the immediate localisation of the lead after intravenous injection.

Analytical Method.

The wet tissues, after being weighed and roughly dried were incinerated in an electric muffle furnace at 550–600°C. The ash was brought into solution by several extractions with hydrochloric acid. (The method followed is essentially that of Fairhall,[1] but it is thought desirable to specify some of the details, as few are given by this author.) The acid solution was then treated with caustic soda to bring the pH to a value of about 1·5 or more, as high a pH being reached as is consistent with avoiding precipitation of phosphates. Methyl violet was the indicator used. The solution, after being thoroughly bubbled with sulphuretted hydrogen, was allowed to stand overnight and then filtered through Whatman No. 40 filter paper. The precipitated lead sulphide was washed with sulphuretted hydrogen water and dissolved in hot nitric acid. The solution was neutralised with strong caustic soda and then made acid to phenolphthalein with acetic acid, a little solid sodium acetate being added to keep down the acidity. A few crystals of potassium chromate were added to the hot solution, and this was allowed to stand a few days. The precipitated lead chromate was then thoroughly washed on the filter with dilute sodium acetate solution, which serves to prevent the precipitate from passing through the filter. The lead chromate was brought into solution with dilute hydrochloric acid, and titrated at once with N/200 thiosulphate in the usual way, after adding potassium iodide. The iodine-starch colour tends to return after completion of the titration much more rapidly than when pure lead salts are being analysed; iron as an impurity may be the cause of this. The effect is variable, and is sometimes enough to make the values rather uncertain. It might perhaps be eliminated by precipitating the lead as sulphide twice.

The method used in the present work is not entirely satisfactory, as amounts of lead below 1 mg., and especially below 0·5 mg., are not accurately estimated. For a number of reasons, such methods as that involving the use of radioactive isotopes [2] or electrometric estimation of lead, which is being studied by our colleague, Dr. H. Millet, appear more promising.

Experimental Work on Lead-treated Cats.

Cats were given intravenous injections of an electrically-prepared lead colloid (about 0·5 per cent. of lead). The injections took place over a period of several hours, and the animals were killed an hour or two later. Thus there was no time for excretion of lead, and the distribution of the metal represents the state of affairs very soon after injection. Cat 1 received 365 mg. of lead and Cat 2 500 mg.; both animals weighed about 2·7 kg. The dosage was thus extremely heavy. (Tables I. and II.)

TABLE I. (Cat 1).

Tissue, &c.	Wet weight in g.	Mg. of lead.	Parts of lead per million.
Liver	80·9	149·6	1850
Lung	38·6	12·8	330
Bone (with marrow)	44·1	1·53	35
Kidney	10·6	0·98	90
Muscle	243·2	0·69	3
Blood	4·1	0·63	150
Heart	7·05	0·14	20
Large intestine (with contents)	76·7	0·0	0

TABLE II. (Cat 2).

Liver	75·8	207·1	2730
Lung	10·6	73·4	6920
Intestine and stomach	116·7	68·7	590
Blood	68·4	19·9	290
Kidney	18·7	4·1	220
Bone (with marrow)	25·5	2·65	100
Heart	6·35	1·87	290
Muscle	139·4	0·33	2
Brain	21·2	0·20	10
Urine	16	0·11	8
Intestinal contents	28·2	0·04	1

The figures evidently refer to a state of affairs when a fair amount of lead is still in circulation. The liver contains about 40 per cent. of the total lead injected. The discrepancy between the values for lung is partly accounted for by the fact that in Cat 2 the blood was largely squeezed out of the lung before circulation stopped. The liver and lung evidently take up the most lead. (Unfortunately the lead-content of the spleen was not estimated in these experiments. In later work, in conjunction with Miss Haworth, this organ was found to take up a relatively large amount). Bone, or more probably bone-marrow, is already taking up lead. Muscle takes up very little. The passage of lead into the intestine has apparently not yet begun.

Behrens [2] has made a study of the localisation of lead soon after injection of very small doses of lead chloride into young cats. As would be expected, the lung takes up a smaller proportion of the much more finely dispersed material. The liver-content preponderates, this organ taking up some 20 per cent. of the lead administered.

Lead Contents of Human Tissues.

The tissues were obtained at operations or after death from cancer patients treated with lead in Liverpool. In one case the placenta from a patient who was treated with lead for carcinoma of the rectum from the 20th to the 34th week of pregnancy, was examined after delivery. In Table III. the cases are so arranged that those which had most recently received injections come first. In estimating the value of the figures, it should be remembered that

TABLE III.

Case No.	Days since last injection.	Tissue.*	Wet weight of tissue in g.	Lead found in mg.	Lead in parts per million.
1	9	Primary carc. of breast.	24	0·37	15
		Secondary carc. of liver.	90	3·71	41
		Liver, in neighbourhood of, and containing growth.	299	3·17	11
		Uterine fibroid.	5	0·57	110
		Kidney.	145	3·34	23
		Lung.	372	0·15	4
		Bone.	90	0·33	4
		Spleen.	142	0·01	0
2	9	Bone.	55	2·91	53
		Liver.	477	13·9	29
		Kidney.	67	1·69	25
		Spleen.	164	3·95	24
		Brain.	270	1·92	7
		Lung.	253	1·54	6
3	23	Primary sarc. of leg.	74	3·3	45
4	36	,,	197	2·22	11
5	40	Placenta, full term.	(500)	0·27	5
6	44	Sarc., retroperitoneal.	604	2·19	3·6
		Spleen.	101	4·12	41
		Kidney.	241	2·97	12
		Bone.	101	0·96	10
		Lung.	441	3·1	7
		Liver.	1054	4·8	4·5
7	48	Primary sarc. of muscle of thigh.	104	0·68	7
8	84	Periosteal sarc.	108	1·26	12
		Muscle (adjacent).	363	3·56	10
		Bone.	128	0·11	1
9	307	Lung.	30	0·10	3
		Cerebellum.	134	0·22	2
		Spleen.	25	0·06	2
		Liver.	59	0·11	2
		Cerebrum.	793	0·69	1
		Kidney.	38	0·03	1
		Bone.	47	0·0	0

* In Cases 2 and 9 no tumour tissue was examined.

where the amount of lead found was small the figures are not considered very reliable. Table IV. gives details of the treatment which the nine patients had undergone. The length of time over which injections were given, the total amount of lead administered (as the electrically-prepared colloid S_7) and the period which had elapsed between the last injection and the operation or death after which the tissues were obtained, are the most significant factors determining the amount of lead likely to be found. (Tables III. and IV.)

TABLE IV.

Case No.	Age and sex.	Body weight in lbs.	Nature of growth.	Situation of primary.	Situation of secondaries.	Period in days during which injections were given.	Time in days since last injection.	Total of lead injected (g.).	Operation, post-mortem or delivery.
1	46 F	?	Carc.	Breast.	Liver.	91	9	0·325	Pm.
2	55 F	120	Carc.	Post cric.	—	150	9	0·375	Pm.
3	14 F	?	Sarc.	Bone of leg.	—	7	23	0·14	Op.
4	37 M	132	Sarc.	Leg.	Bones of leg.	126	36	0·70	Op.
5	37 F	134	Carc.	Rectum.	—	97	40	0·425	Deliv.
6	42 M	130	Sarc.	R.-peri.	Liver and perit.	217	44	0·600	Pm.
7	44 M	126	Sarc.	Thigh.	—	67	48	0·45	Op.
8	40 M	142	Sarc.	Perios.	—	189	84	0·52	Op.
9	38 F	98	Sarc.	R.-peri.	—	430	307	0·775	Pm.

R.-peri. = retroperitoneal. Perios. = periosteal.
Perit. = peritoneum.

Summary.

While there are not sufficient data to make extended discussion worth while, certain features of interest may be mentioned.

In Case 1 the secondary carcinoma of the liver contained four times as much lead as the liver tissue in the neighbourhood, although this last material contained areas of growth. The primary breast carcinoma contained more lead than any normal tissue except the kidney. (The value for the fibroid seems improbably high.) In Case 8 the periosteal sarcoma contained more lead than the adjacent normal bone. Thus we have some evidence that lead is particularly attracted to malignant tissue though against these two cases must be set Case 6, where the sarcoma contains less lead than the normal tissues. It will be noticed that in this patient the liver also contained only a small quantity of lead.

For obvious reasons, tumours in which retrogression had occurred have not been analysed; consequently the clinical results cannot be correlated with the lead-content of the tumours in this investigation. The normal tissues contain variable amounts of lead, and cannot be arranged in any definite order for lead-content. It is significant that very little lead is present in the tissues of Case 9, where nine months had elapsed since lead was last injected, although the patient was supposed to have died from lead poisoning. The remaining cases had all had lead within three months. The suggestion is that very little of the lead injected is permanently stored. The bones do not appear to retain much lead, although Aub *et al* [1] regard them as the chief site of storage. The analytical method used is perhaps least satisfactory for estimating lead in bones.

References.

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2. Behrens, B.: Arch. f. Exp. Path. u. Pharm., 1925, cix., 332.
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Clinical and Laboratory Notes.

A CASE OF URÆMIA SIMULATING ACUTE INTESTINAL OBSTRUCTION.

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The following case has interesting features:—

An unmarried woman, aged 53, was admitted to Addenbrooke's Hospital in March, 1928. The history was that in the previous autumn she had an attack of abdominal pain and vomiting which cleared up after a few days. For several weeks before admission she had become increasingly constipated, and for five days her bowels had not been opened at all. On the second day of complete constipation she began to vomit, and this symptom increased in severity until she could keep nothing down. As far as could be ascertained during this five days she passed no flatus. Urine was passed regularly in apparently normal amount. There was nothing in her past history to suggest renal disease.

On admission she complained of a severe headache and was vomiting every few minutes. On examination the abdomen was distended, especially in the left iliac fossa, and there was some tenderness in this region but no rigidity. The bladder was greatly enlarged and on catheterisation after micturition yielded 17 oz. of urine. There was no visible peristalsis, and nothing could be felt on rectal examination. The pulse was 100 and dehydration from excessive vomiting was severe. The urine had a specific gravity of 1018 and contained a moderate cloud of albumin but no blood, pus, or casts. During the next twelve hours the pulse-rate rose to 120 and the vomit developed a fæcal odour.

Two enemata failed to give any result, and on my assumption that there was an obstruction of the pelvic colon, Mr. V. C. Pennell performed a laparotomy. The whole of the colon was found to be distended with hard fæces, but there was no organic obstruction of any kind. The uterus was retroverted and appeared to be pressing on the neck of the bladder so as to obstruct the outflow of urine. It was therefore replaced in the anteverted position and the abdomen was closed.

The day after operation the blood-urea was estimated and found to be 258 mg. per 100 c.cm. After operation catheterisation was done every six hours and the bowels were eventually opened by means of repeated enemata combined with injections of pituitrin. The vomiting ceased in 48 hours and the patient's condition improved steadily. The necessity for catheterisation gradually became less and at the end of three weeks there was no residual urine after normal micturition, so it was discontinued. The constipation also grew less and the bowels opened regularly with the assistance of salts and aloes. The patient felt very nearly well, was eating with appetite, and getting up. The urine was of normal specific gravity, and contained only an occasional faint trace of albumin and no other abnormalities. The blood-urea was 28 mg. per 100 c.cm. The patient recovered and was well six months after discharge from hospital.

This case, apart from its diagnostic interest, well illustrates the profound effects of urinary retention on the kidney. This factor is only too well recognised by surgeons who, in cases of enlarged prostate with urinary retention, only perform the major operation after preliminary drainage of the bladder, thereby allowing time for the kidney to excrete toxins and waste products which have been dammed back in the blood.

In this instance retention was first caused by the combined effect of fæcal accumulation in the pelvis and the retroverted uterus pressing on the neck of the bladder. The toxæmia from profound constipation probably played its part by lowering the muscular efficiency of the bladder so that it could not overcome the obstruction. Once this occurred secretion by the kidney was seriously interfered with, as was shown by the uræmic state and the high blood-urea. The fact that the urine was normal but for some albumin suggests that this was a pure pressure effect and was not due to an associated nephritis. The rapid

clinical improvement and fall of blood-urea to normal during regular catheterisation was very striking.

I am indebted to Dr. E. P. H. Dudley of Caxton for the early history of this case.

A CASE OF CHRONIC MENTAL DISEASE ASSOCIATED WITH OVARIAN DYSFUNCTION.

By Alfred Danby, F.R.C.S. Edin.,
hon. assistant gynæcological surgeon, general hospital, birmingham; visiting gynæcologist, city mental hospitals;
and
Kathleen Sykes, M.D. Lond., D.P.M.,
medical officer, rubery mental hospital.

Within recent years a considerable amount of attention has been directed to the organic factor in the ætiology of mental disease, and in this connexion the following case seems worthy of record:—

The patient, aged 32, had been married four years and had no living children (she had had one stillbirth and a miscarriage at six months). She was admitted to a maternity hospital in June, 1921, suffering from ante-partum hæmorrhage and albuminuria. Placenta prævia was diagnosed, an internal version performed, and a 28-weeks' fœtus delivered. After delivery there was an intermittent temperature, and on the ninth day of the puerperium she became restless and confused, and as acute mania supervened she was transferred to a mental hospital. There was then evidence of puerperal infection, which subsided after a fortnight's treatment. Mentally she was described as confused, restless, and hallucinated, and at times excited. She remained like this for four years, and on Sept. 18th, 1925, she was transferred, as a case of chronic confusional insanity, to Rubery Mental Hospital, under the care of Dr. T. C. Graves, who has kindly placed these notes at our disposal. She was then in fair health, pale, and rather obese. Her facial appearance was striking: the features were coarse, resembling the acromegalic facies sometimes seen in pregnancy. Her menstrual cycle was irregular $\left(\frac{1-16}{14-63}\right)$, sometimes scanty, and at other times profuse. The Wassermann reaction of the blood and examination of the urine were negative. A gynæcological examination disclosed a lacerated and infected cervix, associated with a subinvoluted uterus. The right ovary was prolapsed, enlarged, and tender. The infection of the cervix cleared up with local treatment. Endocrine and non-specific protein therapy were tried for definite periods, and injections of collosol calcium were also given. An ear and throat examination by Mr. W. S. Adams showed that both tonsils were hypertrophic, and the right membrana tympani was retracted. He removed both tonsils by blunt dissection on Oct. 31st, 1926, and also performed a general sinus examination and drained the left antrum on April 24th, 1927. An encapsuled abscess was discovered in the right tonsil, and the antrum was found to contain muco-pus. There was a relative improvement in the mental condition after each of these operations, especially after the second, when she became less confused and quieter. It was noted, however, that during the whole of the period, and also for three or four days before and after the menstrual flow, she relapsed to her former confused faulty and restive state. She passed the summer of 1927 oscillating between two states. At times she was deeply confused, faulty, resistive, and impulsively violent, having to be nursed in a single room in strong clothing and on a straw mattress. At other times she would dress neatly, mix in a friendly way with the other patients in the general ward, and could actually be allowed out for a few hours with her husband. The change from one state to the other was in direct relation to the phases of the menstrual cycle.

On Sept. 29th, 1927, a pelvic examination under general anæsthesia showed evidence of chronic inflammatory changes of the adnexa associated with a subinvoluted uterus. A diagnostic curettage was performed at the same time; the endometrium was much thickened, and histologically there was considerable hyperplasia of the uterine glands, although it was in the intermenstrual phase. As there was no material mental or physical improvement after this operation a laparotomy was performed by one of us (A. D.) on Feb. 11th, 1928, during the usual intermenstrual remission of symptoms. The operation disclosed definite evidence of long-standing pelvic inflammation; there were many adhesions, both Fallopian tubes were thickened, the ovaries were cystic, and the uterus was subinvoluted. A right salpingo-oöphorectomy was performed; the left tube was conserved, but the cystic portion of the left ovary was resected. The abdominal wall was closed with especial care, and the wound healed by first intention. The convalescence was uneventful. There was slight menstrual loss ten days after operation, a three-day period in March, no loss in April, and a four-day period in May. The conduct became exemplary, and the mental state appeared to be absolutely unaffected by the menstrual cycle. At an interview on May 5th, 1928, the patient was quiet, pleasant, and amenable; she was well orientated, and took an intelligent interest in her surroundings. Her memory was poor for events before her last operation, but she could clearly remember everything after that. She realised that she had been ill, and stated that she now felt a new woman. She ate and slept well. Her complexion was pink and healthy, and in marked contrast with her former thick and coarse appearance. On May 10th she was discharged to the care of her husband after six years and eleven months in a mental hospital, and up to date (Jan. 11th, 1929) there has been no return of her mental symptoms.

Pathological Report.—Right ovary enlarged to one and a half times normal size. Tunica much thickened and surface lobulated and studded with numerous distended follicles of various sizes. Macroscopically a fibro-cystic type of ovary. Sections from the ovary showed the vessels very sclerosed; cystic spaces were present, some of which contained poorly developed lutein tissue of an aberrant type.

Comment.

The outstanding feature of this case was the remarkable exacerbations of mental symptoms at a particular phase of the menstrual cycle, and their complete remission after resection of the diseased part of the ovaries. The irregularity of the menstrual process in interval, duration, and amount was a clear manifestation of disordered ovarian function; the pathological findings were in accord with this. In view of the recent work on "œstrin," and the apparent physiological antagonism between the œstrus-producing hormone and that of the corpus luteum, it seems reasonable to infer that the morbid condition of the ovaries had interfered with the normal correlation of their cyclic functions. Presumably this derangement had thrown out of gear the endocrine balance which, in this instance, had caused a psycho-pathological reaction.

Although this observation must be hypothetical, the result is arresting. It is recorded in the hope that it may stimulate further investigation into this subject.

BLOOD-SUGAR ESTIMATIONS IN THE TREATMENT OF DIABETIC COMA.

By Philip Bayer, M.D. Aberd., M.R.C.P. Lond.,
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and
A. Victor Neale, M.D. Birm., M.R.C.P. Lond.,
resident medical officer, children's hospital, birmingham; rockefeller scholar, 1928.

Diabetes mellitus sometimes presents unusual features in childhood. We have observed a diabetic child who had a blood-sugar of about 40 mg. per cent. over a period of a few weeks without any adverse signs or symptoms, and we believe that this may not be very unusual in children. It may cause great difficulty in the treatment of diabetic coma as the following case illustrates.

A girl of 13 was admitted to the Queen's Hospital, Birmingham, at 9.30 P.M. on Feb. 17th, 1927, in a state of semi-coma, for diagnosis and treatment. The parents related that the girl had been perfectly well until one week before admission, when she had complained of a shivering attack and stayed in bed for three days. After she had been up again for a few hours vomiting had necessitated a return to bed. It had recurred frequently next day, and headache and great thirst with complete anorexia had supervened. During the last few weeks there had also been considerable loss in weight. There was nothing of clinical value in the family history, and no previous illnesses of any consequence.

Her condition on admission was one of drowsiness with marked air-hunger, dry skin, subnormal temperature (95° F.), a pulse-rate of 120, and a dry throat. The deep reflexes were absent and the plantar response was flexor. The fundi were normal, but ocular tension was markedly diminished.

There was a marked odour of acetone. A large distended bladder was emptied spontaneously soon after admission. There were no detectable signs of sepsis anywhere. Urine examination revealed 6 per cent. of sugar (Fehling's method),

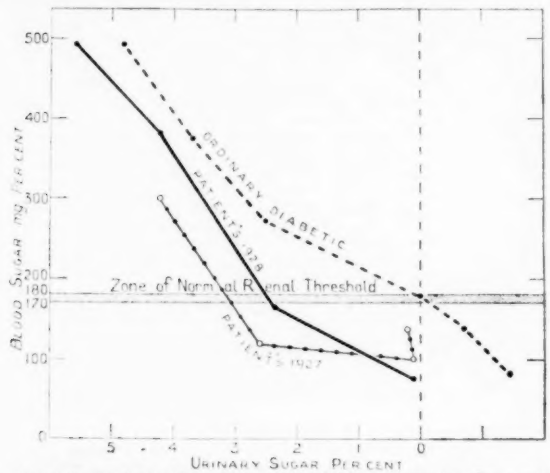

Chart to illustrate the relationship of blood-sugar to glycosuria in the patient (1927 and 1928) and in a diabetic with normal renal threshold.

a haze of albumin, and strongly positive tests for acetone and diacetic acid.

A diagnosis of diabetic coma was made and treatment was given as shown in the following table.

Table showing Treatment and Progress after Admission.

Date: Feb., 1927.	Time.	Blood-sugar mg. per cent.	Urine-sugar per cent.	Treatment.
				Period A.
17th	10.30 P.M.	—	6·0	Cal. gr. iii., sod. bicarb. gr. xv., 4-hourly. 20 units insulin.
	11.30 „	—	—	20 „ „
18th	12.45 A.M.	—	4·2	20 „ „
	1.45 „	—	—	20 „ „
	3.0 „	—	3·7	20 „ „
				Enema given.
	5.30 „	—	—	10 units insulin.
	6.30 „	—	—	10 „ „
	8.15 „	—	2·0	20 „ „
	9.15 „	—	1·8	10 „ „
				Period B.
	10. 0 „	13	—	100 c.cm. 20 per. cent. gluc. int. 1 c.cm. of adrenalin. Gluc. and sod. bicarb. per rectum.
	11.30 „	19	—	100 c.cm., 20 per cent. glu. int.
	12.30 P.M.	89	—	—
	4. 0 „	25	—	1 c.cm. adrenalin.
	4.30 „	—	—	100 c.cm. 20 per cent. glu. int.
	6. 0 „	—	—	100 c.cm., 20 per cent. „ „
	10.30 „	25	—	300 c.cm., 20 per cent. „ subc.
				Period C.
	11.30 „	—	1·0	—
19th	3.30 A.M.	—	—	100 c.cm. gluc. subc.
	8.30 „	—	—	50 c.cm. „ by mouth.
	10. 0 „	283	3·8	—
	10.30 „	—	—	10 units insulin.
	12.30 P.M.	115	2·8	—
				Period D.
	3.30 „	—	—	50 c.cm. gluc. by mouth.
	6.15 „	—	—	2 oz. gluc. by mouth.
	11.30 „	72	2·7	2 „ „ sol. „ „
20th	8.30 A.M.	90	—	—

Gluc. int. = glucose intravenously. Subc. = subcutaneously.

During Period A the child was treated with insulin for diabetic coma—circumstances made it impossible to do blood-sugar estimations, but sugar was present in the urine. During Period B the patient was in a state of hypoglycæmia and collapse with quick feeble pulse, flushed face, and very shallow breathing. During Period C there was disappearance of the hypoglycæmic phenomena and consciousness was regained. Period D showed a marked improvement in general condition. It is to be noted that there was a rapid fall of blood-sugar following 10 units of insulin, yet glycosuria persisted.

After recovery from coma the patient was put on a diabetic diet of over 1000 calories; she passed from 6 per cent. to 8 per cent. of sugar daily, and this was readily controlled by 5–10 units of insulin in the 24 hours.

Further Investigations.

Blood count: leucocytes, 14,000; red cells, 4,500,000; colour-index, 0·8; no abnormal features in films. Blood pressure: 100/65. The blood contained 36 mg. of urea per cent., 2 mg. of uric acid per cent., and 1·2 mg. per cent. of creatinine.

The knee- and ankle-jerks returned, but remained diminished. X ray examination of the cranial sinuses, lungs, &c., showed no abnormality.

Glucose-tolerance Test.

		mg. per cent.	
Blood	9.20 A.M.	286	Before 50 g. glucose.
	10 A.M.	400	After 50 g. glucose.
	10.40 A.M.	465	
	11.20 A.M.	385	
	12.30 P.M.	330	

		Quantity.	Sugar (g.) per cent.
Urine	8.45 A.M.	145 c.cm.	7·46
	10 A.M.	110 c.cm.	6·86
	11 A.M.	125 c.cm.	9·8
	12 noon	90 c.cm.	9·8
	1 P.M.	45 c.cm.	8·4

Investigation of Renal Threshold.

April, 1927.	Blood-sugar.	Urine-sugar.
6th	303 mg. per cent.	4·2 per cent.
11th	118 „ „	2·6 „
19th	102 „ „	Trace.
29th	154 „ „	0·14 per cent.

After another attack of coma in July, 1928, the investigation of the renal threshold on August 14th showed:—

	Blood-sugar.	Urine-sugar.
10.25 A.M.	488 mg. per cent.	5·5 per cent.
11.25 A.M.	385 „ „	4·1 „
12.30 P.M.	169 „ „	2·3 „
1.10 P.M.	75 „ „	Trace.

Her condition was then very little changed since her previous admission, and 20 to 30 units of insulin were required daily to control the sugar excretion on a diet of sufficient calorific value to maintain her general health.

Summary.

1. On admission the child's urine contained 6 per cent. of sugar. She was treated with 140 units of insulin (in 20-unit doses), and as the urine still contained 1·8 per cent. of sugar a further 10 units of insulin were given. During the period it was not possible to obtain blood-sugar estimations, but one hour after the last dose of insulin the blood-sugar was 13 mg. per cent. Clinically the child had passed from hyper- to hypo-glycæmia, but still retained the glycosuria. 2. It was manifest that the renal threshold had been completely disorganised and, for the time being, the kidneys were allowing sugar to escape despite a subnormal blood-sugar. This rendered it essential that further treatment should be controlled by frequent blood-sugar estimations. 3. After the state of coma had been overcome a great susceptibility to insulin occurred, as shown by the reduction of the blood-sugar from 283 mg. per cent. to 115 mg. per cent. with 10 units of insulin, the urinary sugar falling from 3·8 per cent. to 2·0 per cent. at the same time. This further illustrated the value of blood-sugar estimations. 4. Large doses of glucose were required to raise the blood-sugar to normal limits, apparently because of the extreme degree of renal leakage and prolonged effect of insulin. 5. Four weeks after admission the renal threshold for glucose had improved, but had not become normal. 6. A recent re-examination shows the persistence of the abnormal renal threshold.

We are indebted to Dr. J. G. Emanuel and Dr. L. G. J. Mackey for allowing us to investigate and report this case.

LONDON HOMŒOPATHIC HOSPITAL.—This institution, in Great Ormond-street, W., has just received a Charter of Incorporation. The hospital was founded in 1849, and since the present building was opened in 1895 it has more than once been enlarged.

Medical Societies.

HUNTERIAN SOCIETY.

AT a meeting of this Society, held at the Mansion House on Jan. 14th, the chair was taken by the President, Dr. ARTHUR WESTERMAN, and a Hunterian lecture on

INTRATHORACIC SURGERY

was delivered by Prof. J. H. ZAAIJER, of the University of Leyden. He described the work of himself and his colleagues since 1909 on the surgery of the œsophagus and lungs. He said he had felt that positive and negative pressure anæsthetic apparatus was essential, but that the elaborate American apparatus for this purpose was unnecessary. He described the simple apparatus used in Leyden and the device used to apply the mask to the face in any position of the patient. Positive pressure anæsthesia was necessary as a precaution in unilateral as well as in bilateral pneumothorax. It was also valuable in preventing air-embolism, as illustrated by a case of a large lymphogranuloma on the front of the neck which had an extensive venous anastomosis with the chest wall. Nitrous oxide oxygen ether anæsthesia had proved very satisfactory for these cases. Experiments on animals had convinced him that it should be possible to perform an intrathoracic resection of the œsophagus in man. A young woman with a benign stricture had consulted him, as she was really starving. Gastrostomy had been performed, but the stricture could not be penetrated and a large putrefying mass had remained in the enormously dilated œsophagus. He had therefore removed a number of ribs on the left side, isolated the œsophagus, and sutured it to the thoracic wall. Twelve days later he had opened the œsophagus, making a thoracic œsophagostomy. The patient had fed herself by means of a glass bottle and bellows concealed under her clothing. The food taken into the mouth passed through the œsophagostomy into the bottle by rubber tubing, which she closed with a pressure-screw when the bottle was full. Compression of the bellows then forced the food into another tube which led it through the gastrostomy opening into the stomach. This experience had shown that the human œsophagus could be isolated from its bed for a considerable distance without undergoing necrosis, and this opened the way to treatment of low œsophageal carcinoma. The next cancer case had been treated in three stages—gastrostomy, extensive rib resection, and removal of the tumour. The œsophagus had been sutured to the mobilised chest wall and the patient had lived for three and a half months, thus proving the technical operability of carcinoma of the cardia and lower end of the œsophagus. Other surgeons had performed the operation with cure lasting for many years. In Prof. Zaaijer's opinion it was worth while continuing efforts to treat this condition by operation. He had tried several ways, but remained convinced that his own method was the safest.

Cardiospasm.

However slight the direct results of this work might have been as yet, the indirect results had already been far reaching. The commonest form of cardiospasm occurred in patients with marked abdominal ptosis, and there was always a long abdominal portion of the œsophagus with a thin circular musculature. The dilated part, above the diaphragm, had thickened musculature. He had therefore concluded that the rest-position of the subdiaphragmatic piece of the œsophagus was closure, its function being to open at the required moment. The opening muscles were the longitudinal ones, and these would be in a bad condition for work in the ptotic œsophagus. The function of the supradiaphragmatic part of the œsophagus was to push food on; if it found the cardia closed, the result became a matter of balance; so long as the force of the upper part could overcome the resistance of the cardia there would be no symptoms. When, however, dilatation succeeded to hypertrophy "cardiospasm" developed. It was a curious fact that a thick sound could always be passed through a cardiospastic œsophagus, thus suggesting strongly that the condition was not a "spastic" one. He had had success with Heller's method of splitting the circular muscle bundles, and had found that the dilatation was reduced. Influenced, however, by his theory of the origin of the condition, he had tried treatment by rest of the œsophagus—i.e., feeding for several weeks through a tube and washing out the œsophagus with salicylic or boric acid solution. This had proved very successful.

Another variety of cardiospasm might result from an excessive amount of air in the stomach. One patient had been benefited by a gastrostomy to let out the air, and had been finally enabled to return to her work by an apparatus to suck air out through the gastrostomy, to be dispersed over her shoulder. In the Middle Ages a woman like this would certainly have failed to pass the "sinking-test" for witches, as the air in her stomach would have made her float.

Organic Strictures.

Prof. Zaaijer showed slides illustrating a number of cases of organic stricture of the œsophagus treated by the usual dilating methods. He pointed out the advantage of using a thin rubber tube threaded with a silk or cotton thread. The patient would bite through an empty tube, and the thread alone would cause a cutting sensation in his throat. One patient, a man of 49, had been treated by gastrostomy and jejunostomy for gastric ulcer 14 years before. He had later experienced difficulty in swallowing, had been diagnosed as œsophageal carcinoma, and pensioned with a gastrostomy as a hopeless case. His œsophagus had been dilated by Prof. Zaaijer in the usual way and cured completely, but unfortunately he had been unable to obtain work, as he had been officially declared "incurable." For higher stricture an antethoracic œsophagus might be made by suturing a loop of small intestine to the stomach and the skin and making a skin tube above it. One patient successfully treated in this way at Leyden 11 years ago was still taking his food normally with his fellow-servants in the hospital.

Bronchiectasis.

The treatment of bronchiectasis had been carefully worked out in the Leyden clinic and a series of well-marked stages had been defined. Lobectomy was no longer a dangerous operation, and was almost a certain cure. French operators seemed satisfied with avulsion of the phrenic nerve, but in Holland, as in England, the results had not been very good. Thoracoplasty was the second stage, but it must be done so as to interfere as little as possible with the function of the healthy parts of the organ. The methods of Sauerbruch, Brauer, and Wilms damaged the upper lobes seriously and were therefore undesirable. Extended resection of the ribs over the affected lobe was a useful procedure, but must include removal of the periosteum with the intercostal muscles. This removal also lessened the shock of the operation. For one thing it saved the shock-effects of absorbing bruised muscle tissue; secondly, if the thoracoplasty failed, the subsequent intrathoracic operation became a soft-tissue manœuvre, and so was greatly facilitated; thirdly, the removal of periosteum and muscles caused adhesion of the underlying lung. The next stage was extirpation of the lobe or slow destruction of it by Graham's method. The latter involved grave danger of air-embolism and hæmorrhage. Resection in the usual way caused shock and risk of broncho-fistula. The third stage at Leyden had therefore taken the form of intrapleural plugging of the pleura after freeing the affected lobe from its adhesions as far as possible. This gave complete and permanent cure by

compressing the diseased lobe with a minimum of danger and without complications. Even, however, if the lobe were too indurated to be compressed, the final stage of lobectomy—once so feared—was not really much more serious. When the plugs were removed the lobe was found as a more or less pedicled structure in the closed pleural cavity around it, and it could be removed by slow elastic stricture of its root. This could be done in the ward without pain or shock, the elastic tube being tightened daily until the lobe necrosed and fell off—usually in about two weeks' time. The cavity was then loosely plugged with gauze and became smaller and smaller until it closed. Prof. Zaaijer showed photographs and radiograms of a number of cases, demonstrating that the patients recovered completely, with almost normal use of the arm and normal function of the remaining lobe of the lung.

The PRESIDENT recalled the visit of the Dutch admiral who had sailed up the Thames with a broom at his masthead, and the English admiral who had retorted by fastening a whip to his. Prof. Zaaijer, he said, had brought both broom and whip, sweeping away many old notions of the dangers of intra-thoracic surgery and stimulating thought. Meetings such as this performed an international service in preserving the friendship and increasing the mutual respect of two nations.

Mr. J. E. H. ROBERTS, proposing a vote of thanks, remarked that a great deal of work on the surgery of the œsophagus had been done in the north-west corner of Europe without being heard of in this country. The knowledge that surgeons could deal with bronchiectasis was not adequately spread throughout the profession, and therefore surgeons did not see cases in the early, basal, unilateral stage, but only when the condition had become diffused.

Sir JAMES DUNDAS-GRANT, seconding the vote, said that Prof. Zaaijer's demonstration had been extraordinarily convincing, and mentioned the use of radium, to the possibilities of which surgeons must not shut their eyes.

DONATIONS AND BEQUESTS.—Mrs. Jane Parton, of Percy House, Tunbridge Wells, left £22,500 for charity, including £2000 each to the Royal Blind Pension Society, Dr. Barnardo's Homes, and the General Hospital, Maidstone; £1000 each to the Cancer Hospital, Brompton, the Royal Hospital for Incurables, Putney, and the General Hospital, Tunbridge Wells; £500 each to the Convalescent Home for Children, Hawkenbury, Tunbridge Wells, and Dr. Barnardo's Cripples' Home, Tunbridge Wells.—Dr. John Cornwell Round, of Purbrook, Sydenham, left over £15,000 upon trust for two persons and on the decease of the survivor with remainder equally between the Royal National Lifeboat Institution and the Samaritan Fund of St. Thomas's Hospital.—Lady James, of Springfort, Stoke Bishop, Bristol, left £750 to Bristol General Hospital and £250 to Bristol Blind Asylum.—Sir George Sheppard Murray, of Cleveland House, St. James's-square, and Barretstown Castle, Co. Kildare, left £1000 each to the Imperial Cancer Research Fund, the National Association for the Prevention of Consumption or Other Forms of Tuberculosis, and Dr. Barnardo's Homes, as an addition to capital, and £500 to Poplar Hospital for Accidents.—Mr. Edmund Murray Dalgety, of Magdalen Yard-road, Dundee, left £2800 to such Dundee charitable institution or institutions as the trustees may select; £1000 each to the Dundee Royal Infirmary and the Royal Victoria Hospital, Dundee; and £200 to the Little Sisters of the Poor, Wellburn, Lochee.—Mr. Edwin William Goodwin, of Didsbury, Manchester, left £500 each to Manchester Royal Infirmary, Ancoats Hospital, the Boys' and Girls' Refuges and Homes, St. Dunstan's Hospital for Blind Soldiers and Sailors, Manchester and Salford, the Royal Schools for the Deaf and Dumb, Old Trafford, Manchester, the Crippled Children's Help Society, and St. Mary's Hospitals, Oxford-road, Manchester.—Mr. Frederick William Archer, of Lansdowne-place, Hove, left £1000 to the Leicester Royal Infirmary, £500 to the Leicester Guild of the Crippled, £200 each to the Leicester Infirmary for the Blind, £100 each to the Leicester Wycliffe Society for the Blind and the Leicester Children's Hospital.—Lord Glendyne has made a donation of £1000 towards the £35,000 required by the Royal Northern Hospital, Holloway, in order to obtain an anonymous gift of an equal sum.

Reviews and Notices of Books.

ARTHRITIS.

Chronic (non-tuberculous) Arthritis. By A. G. TIMBRELL FISHER, *M.C.*, F.R.C.S. Eng., late Hunterian Professor, Royal College of Surgeons of England; Surgeon to the Seamen's Hospital. London: H. K. Lewis and Co., Ltd. 1929. Pp. 232. 25*s*.

PROBABLY what is commonly known as rheumatic arthritis causes in this country as much or more suffering and disability than all other chronic diseases put together. Recognising this fact and realising that there is much still to be learnt about the physiology of joints and the pathology and ætiology of chronic arthritis, Mr. Timbrell Fisher undertook the investigations which are described in this book. Although gouty arthritis and joint diseases associated with chronic affections of the central nervous system are included, the really important subjects of this work are the two conditions which are described as rheumatoid arthritis and osteo-arthritis. The author first discusses the physiology and histology of the parts forming normal joints and then proceeds to describe a number of experiments and investigations designed to advance our knowledge of the pathology of both forms of chronic joint disease and of their treatment. Probably in this country no surgeon has had a more widespread and enduring influence on the treatment of inflamed and painful joints than John Hilton of Guy's Hospital, whose lectures on rest and pain have been accepted by several generations of students and surgeons as a true gospel. Of late years it has been realised, however, that in certain cases rest is not the best treatment for a chronic inflamed joint. As Mr. Fisher points out, complete rest and cessation of function leads to atrophy of important joint elements, an atrophy comparable to the degeneration which is one of the characteristics of disease; whereas in many cases of chronic arthritis, movement favours cure and preserves function. The difficulty is that only experienced surgeons can decide in which cases to prescribe and insist on movement and in which to order complete rest, with or without the intention of procuring healing by ankylosis.

Mr. Fisher gives due importance to orthopædic measures of various kinds, but describes also the operations of arthrotomy, cheilotomy, synovectomy, excision, and arthrodesis, including his own method of approach to and exposure of the knee-joint. Rheumatism of joints is, however, as much in the domain of medicine as of surgery, and Mr. Fisher recognises medical treatment to be of the first importance.

This book is really interesting. New facts and original observations are introduced and some known facts are brought to notice in a new light and fresh inferences are drawn from them. All who have to do with cases of chronic joint disease of so-called rheumatic origin will find it worth while to study Mr. Fisher's views.

Les Arthrites Gonococciques. By HENRI MONDOR, Professeur agregé de la Faculté de Médecine de Paris; Chirurgien des Hôpitaux. Paris: Masson et Cie. 1928. Pp. 528. Fr.70.

THE arthritic manifestations of gonorrhœa were first recognised in France by Swediaur, in Berlin by Christian Theophilus Selle, and in Great Britain by John Hunter, Sir Benjamin Brodie, and the surgeon who in this book is called "Sir Astley Copper." It is probable that gonorrhœal arthritis is nowadays more prevalent in France than with us, but whether its incidence be frequent or relatively rare, its consequences are disabling and its course prolonged. A large and serious work upon this important subject is therefore welcome. Prof. Mondor protests against the use of the term rheumatism in this disease, which he rightly describes as an infectious arthritis, in its early

stages generally acute. He writes as a surgeon and is sceptical as to the value in gonococcal arthritis of medical treatment, such as serotherapy and vaccinotherapy or palliative measures. His conclusions are founded on a vast knowledge of the pathology of the disease; many pages are devoted to discussion of pathological anatomy, and Prof. Mondor illustrates his study with coloured microphotographs and other figures of considerable interest. In the clinical section the classification is elaborate and presents the various forms and sites of disease under 14 headings. The scale of the work may be gauged by the fact that under the general heading of "Formes segmentaires" subsections deal separately with the disease as it is manifested in each segment of the patient's frame; for example, one is concerned solely with gonorrhœal feet, such as flat-foot, pseudo-gout, bony spikes and outgrowths, and "pied-cloué." Cytology, bacteriology, blood culture, serodiagnosis, vaccinodiagnosis, and fixation reactions of the disorder are treated in sections headed Laboratory Research. Much space is devoted to descriptions of cases and discussion of methods of treatment. At the outset the original focus of the disease in the genito-urinary system must receive early and thorough treatment, including necessarily the seminal vesicles in the male and the uterus and tubes in the female. For the rest, Prof. Mondor disposes politely but firmly of the arguments of those physicians who claim to have obtained results from serum and vaccine therapy. He has found no reliable evidence to justify such claims. Of the hyperbolical praise accorded to certain other methods he says: "cet amas d'adjectifs ne saurait cacher entièrement le visage de la réalité." In fact, the number of sovereign remedies advocated in the past may be taken as an index of the ill-success of treatment in too many refractory cases. Immobilisation, compression, mobilisation, massage, puncture, hyperæmia, electrotherapy, radium, autoserotherapy, protein treatment, sero- and vaccinotherapy have also been vaunted. The author considers that of these only vaccinotherapy with puncture as a secondary measure are of much value and that surgical intervention, especially arthrotomy with immediate suture if used very early in the course of the disease, is the method of choice. His statistics seem to us to bear out his conclusions.

This work should be studied by all those who have to treat gonorrhœal arthritis. It contains a vast amount of information on the subject and abundant evidence is offered from which the reader may draw his own conclusions. The mass of facts included makes the book bulky, but it has no redundant passages, and compression would have diminished its value. There is a bibliography of 47 pages, but no index.

CARDIAC ARRHYTHMIAS.

By IRVING R. ROTH, M.D., Assistant in Medicine, Mount Sinai Hospital. New York: Paul B. Hoeber, Inc.; London: Humphrey Milford, Oxford University Press. Pp. 210. 36s.

TEN years ago there was a certain novelty about the cardiac arrhythmias which rendered them extremely fashionable for examination purposes and as subjects for post-graduate lectures. Now that novelty has worn off, and the well-informed practitioner has a pretty good idea of what is meant respectively by auricular fibrillation, sinus arrhythmia, and extrasystoles. He is unlikely to need a large tome on the subject, and his less enterprising colleagues, who do not trouble their heads about such matters, will certainly not read one. We do not therefore anticipate that there can be a big demand for such a work as this, for it is quite an elementary treatise and will not appeal to the specialist. Certain people, however, cannot digest condensed matter and prefer to take their mental nourishment in bulk. This work should appeal to them, for the text is clearly written and the diagrams are good, though in some cases unnecessarily elaborate. The printing and production generally are excellent.

WILLIAM HARVEY.

Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus. By WILLIAM HARVEY, M.D. With an English Translation and Annotations by CHAUNCEY D. LEAKE, Professor of Pharmacology, University of California. London: Baillière, Tindall and Cox. 1928. With five plates. Pp. xii. + 228. 16s.

William Harvey. By ARCHIBALD MALLOCH, M.D., M.R.C.P., Librarian, New York Academy of Medicine. New York: Paul B. Hoeber, Inc. 1929. With ten plates. Pp. xii. + 103.

THE Harvey Tercentenary was celebrated on the other side of the Atlantic as well as on this, and these two volumes are some of the tangible results. Prof. Chauncey D. Leake has produced an interesting and comprehensive memorial of Harvey's work in his book, which would probably have found a wider public had it come while interest in the subject was at its height. The first part of the work consists of a facsimile reprint of the first edition of "De Motu Cordis"; this includes the leaf of errata which was omitted from the facsimile issued by the Royal College of Physicians of London. The text was so inaccurately printed that this leaf is of some importance. The second part is a new translation of the treatise, which Prof. Leake believes to be "the third attempt to render Harvey's classic into current English idiom." Actually it is the fourth, but this fact in no way detracts from the value of Prof. Leake's rendering, no attempt having been made since 1847. In that year the Sydenham Society published Robert Willis's stilted and unattractive translation, and this has held the field ever since as the standard English text. The new text is a great improvement on the old. It is a sufficiently free translation to make easy reading, without departing from Harvey's intention, and for this reason the book should be welcomed in England and America. Prof. Leake has added numerous useful and interesting annotations in footnotes. His illustrations increase the value of the book, though his reproduction of Harvey's diagrams of the venous circulation in the forearm is hardly adequate.

Dr. Archibald Malloch's smaller book, based on a tercentenary address delivered in Boston, provides an admirable companion volume to the new translation. In small compass he includes a study of Harvey's life and doctrines, in which all the important facts are attractively presented. It is difficult at the present day to discover any new facts connected with Harvey, but Dr. Malloch, at any rate, contributes the observation that, in spite of his name, Wilhelm Fitzer, Harvey's first publisher, was probably an Englishman, who published also works by Robert Fludd and De Bry's "Voyages." We thus come nearer to an explanation of why Harvey chose Frankfort as his place of publication. Dr. Malloch was also responsible for the very useful Catalogue [1] of a Harvey Exhibition held at the New York Academy of Medicine.

INCOMPATIBILITY IN PRESCRIPTIONS.

By SANTOSH KUMAR MUKHERJI, M.B. Calcutta: Rai Saheb B. N. Mukherji and Son. 1928. Pp. 135.

THE excellent intentions of this book are not quite borne out in the result. Possibly a less ambitious treatment of the subject would have saved the author from committing himself to such singularities as the statements that calcium hydroxide is insoluble in water, and that syrup of squill cannot be given with alkalis. Repetition is surely not inevitable in a volume of this size. For example, we read on pages 41, 43 and 45 the statement that sodium bicarbonate is given in combination with diluted hydrocyanic acid. Prolixity, however, is not so serious a fault as inexactitude. Compression under expert advice may produce a revised edition that can be welcomed.

[1] Bulletin of the New York Academy of Medicine, 1928, iv., 906.

EPIDEMIC ENCEPHALITIS WITH PREGNANCY, LABOUR, AND THE PUERPERIUM.

By FREDERICK ROQUES, M.A., M.D., M.Chir. Cantab., F.R.C.S. Eng. Manchester: Sherrat and Hughes. 1929. With two appendices. Pp. 139. 15*s*.

SINCE 1917 when in the *Wien. Klin. Wochenschrift* von Economo first described encephalitis lethargica, the literature on this disease has been extensive. It is, however, a curious fact that but little has been written upon it, when complicated by pregnancy, labour, and the puerperium; as far as we know this is the first book that has been published on the subject in any language, an omission doubtless due in the main to the fact that the complication is admittedly uncommon. Nevertheless it was quite time that the omission should be remedied, and Mr. Roques, towards this end, has dealt with the material at his disposal most thoroughly. Starting with chapters on its ætiology and pathology and on the clinical manifestations of epidemic encephalitis in the pregnant woman, the next four chapters deal with the influence of pregnancy on acute epidemic encephalitis and the influence of this disease on pregnancy, labour, and the puerperium. Two chapters on the child are succeeded by two on diagnosis and treatment, the last four chapters dealing with pregnancy and Parkinsonism. The records are given of 40 cases, which have not been published before, placed at the disposal of the author by colleagues, but in order to make his survey more comprehensive, the author has collected from such literature as was available 171 cases in which pregnancy was complicated by acute lethargic encephalitis and 23 cases in which pregnancy was associated with the Parkinsonian syndrome.

From a consideration of the material at his disposal, the author concludes that in the majority of cases pregnancy generally proceeds to term without any interruption, that in cases of greater severity premature labour often supervenes, while in the worst cases the patient dies before delivery. Labour differs in that it is painless, and the puerperium is not affected. Other interesting points are, for instance, that neither the age nor the parity of the pregnant woman increases the chance of infection, the mortality is greater when the infection occurs early in pregnancy, and that probably primigravidæ are more frequently attacked than multiparæ. The treatment of the complication is discussed fully and the author is of the opinion that the artificial termination of pregnancy is not indicated, that the second stage of labour should be completed as soon as possible with the aid of the forceps if necessary, and that the mother should not nurse her child. He also issues a warning that the onset of labour should be very carefully watched since, because of its painless nature, the child may be lost. His conclusions on pregnancy and Parkinsonism are that if the onset of Parkinsonism coincides with the onset of pregnancy, labour should be induced. Appendix I. contains full notes of the author's 40 cases, and Appendix II. a list of the cases previously published in medical literature, as regards their age, parity, stage of gestation, and results to the mother and child. There is a full bibliography consisting of 119 references.

Mr. Roques is to be congratulated on rendering a real service to obstetric medicine.

GOULD'S MEDICAL DICTIONARY.

By GEORGE M. GOULD, A.M., M.D. Second edition, revised and enlarged, by R. J. E. SCOTT, M.A., B.C.L., M.D., Fellow of the New York Academy of Medicine. With illustrations and 170 tables. London: H. K. Lewis and Co., Ltd. 1928. Pp. 1522. 30*s*.

THIS book now contains over 83,000 defined words, many hundreds of which are new, and its size exceeds that of the first edition by 125 pages. Dr. Scot states that "the present issue may be said to be the sum of all of Gould's Dictionaries." The parent volume, which appeared in 1894 and was entitled "An Illustrated Dictionary of Medicine, Biology and Allied Sciences," has been familiar for 30 years to all who value precision in medical and scientific nomenclature. A new feature is the inclusion of portraits of medical men who have given their names to operations or tests—a growing practice. This lays the burden on the lexicographer of noting the date of their death, and the fact has been overlooked that Henry Charlton Bastian died in 1915, George Huntington in 1916, Sir William Crookes in 1919, and Vladimir Bechterew on Christmas Day, 1927; while Dupuytren was born not in 1778, but on Oct. 6th, 1777. The eponym of Wilson's disease is misspelt. Help is given in the pronunciation of these proper names: Gould would allow us to call Blaud "blawd," and Glauber "glowber," but Angstrom is to be read "awng-str-m," which we regard as a hardship. While the dictionary is not free from trifling inaccuracies, it contains a wealth of accurate information, admirably displayed, which should make it as popular in its revised form as it was in the old.

THE SACK-'EM-UP MEN.

By JAMES MOORES BALL, M.D., LL.D. London and Edinburgh: Oliver and Boyd. 1928. Pp. 216. 16*s*.

THE author of this book is an ophthalmic surgeon of St. Louis, whose text-book, entitled "Modern Ophthalmology," is popular in other countries besides his own. The historical bent of his mind has already been shown in his monograph on "Andreas Vesalius the Reformer of Anatomy"; under a rather lurid title he now gives a good account, drawn from many sources, of the doings of the body-snatchers or resurrectionists—"its very hard them kind of men won't let a body be." The book is far from being a mere compilation of extracts from the works of others; it contains an excellent epitome of the history of anatomy and the provisions for its teaching in Europe and the United States. As is well known, the legal provisions for anatomical teaching in this country, before 1832, were meagre in the extreme. Even so late as 1830 the founder of one of the last of the private schools of anatomy in England wrote of the difficulties of procuring subjects and the personal risk attached to the office of a teacher of anatomy. Teachers on the Continent were better off in these respects. Naturally much space is devoted to the West-Port murders in Edinburgh a hundred years ago, and to the murder of an Italian boy, in London, by Bishop and Williams, in 1831. Of course Burke and Hare and Bishop and Williams were not "resurrectionists" in the proper sense of the word, but their ghastly trade was made possible by the apathy of the Government in the matter of making proper provision for the teaching of anatomy in this country, and no book on the subject would be complete that did not include a full account of these murders. Warburton's Anatomy Act of 1832, which put an end to body-snatching and to "murder as a fine art," is given in full. The book ends with a short chapter on the teaching of anatomy in America and the New York anatomy riots, and alludes briefly to certain cases of body-snatching which have been perpetrated in the States within comparatively recent times. It is obvious that when describing events which took place at so recent a date (only 50 years ago), the author has to be guarded in his statements; the time is not ripe for a complete review of the circumstances, but it is satisfactory to learn that the officials of the medical college that received the body were exonerated from all responsibility.

A special feature of this book is the wealth of illustrations; the plates are well chosen and excellently reproduced. Some rare handbills, and the title pages of some of the chap-books that flooded Edinburgh

at the time of the Burke and Hare murders, are included in the text and add greatly to its interest and value.

HEINE, THE STRANGE GUEST.

By HENRY BAERLEIN. London: Geoffrey Bles. 1928. Pp. 310. 12*s.* 6*d.*

Mr. Henry Baerlein's title has its origin in Matthew Arnold's lines:—

> The spirit of the world
> . . . let a sardonic smile
> For one short moment wander o'er his lips.
> That smile was Heine!—for its earthly hour
> The strange guest sparkled . . . ;

and certainly Heine's life, literary, mental, and spiritual, did make of him a strange guest on earth. We have in this book a discursive story of him, from the cradle to the grave. Born at Dusseldorf in 1797, of Jewish parents, he became more French than many French of the period, through his veneration of Napoleon, with whose most brilliant period his own youth coincided. He failed in Hamburg as a business man, was terribly bored at Göttingen as a scholar, was accepted while still young by the leaders of thought and letters in Berlin as poet and journalist, apostasised from the Jewish religion on practical grounds, visited England where he admired Canning and found Walter Scott wanting, and settled in Paris to make an imprudent love match which, while it lasted, brought great happiness, and supplied him with an unboundedly affectionate attendant through his terribly protracted and fatal illness. This story Mr. Baerlein tells with great fullness of incident in a clear and pleasant way that should lead many who can read German to enjoy the poet's gay and serious phases, his wit, his penetration, and his lovely literary gift.

JOURNALS.

BRITISH JOURNAL OF CHILDREN'S DISEASES, Vol. XXV., October-December.—Dr. C. C. Beatty contributes a paper on Congenital Stenosis of the Œsophagus, in which he has collected and tabulated 50 cases reported in the literature up to 1926, in addition to five examples of the condition which came under his own observation. He distinguishes a membranous type in which there is a partial occlusion of the lumen by a fold of normal mucous membrane, and a non-membranous type in which there is a localised reduction in the size of the œsophagus. The onset of symptoms is usually in infancy, the most characteristic symptom being regurgitation of food a few minutes after deglutition without either pain or nausea. Adult patients may be well developed, but some degree of infantilism is not uncommon in children and adolescents. The prognosis in the membranous type is good, and in the non-membranous type is not unfavourable, as several patients have lived to old age. The best treatment in the membranous form is dilatation by bougies controlled by œsophagoscopy. In the non-membranous form a few successful results have followed radical operation. —In a paper on the Rheumatic Child, based on his study of 400 cases at the Downs Hospital, Sutton, and Queen Mary's Hospital, Carshalton, Dr. N. Gray Hill shows that there are no physical characteristics peculiar to rheumatic children, such as colour of the hair, colouring of the eye, or absence of cutaneous pigmentation, and maintains that the belief that there is a rheumatic type cannot be substantiated. He also brings forward evidence that there is very little, if any, connexion between the life and work at school and the onset of rheumatism or chorea.—Dr. F. Parkes Weber records a case of a "White" Nævus of the Conjunctiva in a Child and a Dark-blue Nævus of the Forehead.—In their paper on Erosion of the Neck Vessels in Scarlet Fever Dr. J. D. Rolleston and Dr. W. Gordon Sears report two fatal cases of this rare complication which they had seen at the Western Fever Hospital in the course of six months. The first was a male infant, aged 11 months, who, in the course of moderately severe scarlet fever complicated by suppurative cervical adenitis and otorrhœa, had profuse hæmorrhage from the ear and died in a few minutes. The bleeding vessel was not identified post mortem, but probably one of the veins in the neighbourhood of the cervical abscess had been eroded. The second case was that of a female infant, aged 2 years, with a septic attack of scarlet fever, also complicated by suppurative cervical adenitis. In this case the hæmorrhage took place from the wound in the neck where the cervical abscess had been opened, the source of the hæmorrhage being the internal jugular vein.—The abstracts from current literature are devoted to ophthalmology.

NORWEGIAN STUDIES IN SYPHILIS.

CRITICISM OF THE RESULTS OF SPECIFIC TREATMENT.

THE late Dr. Cæsar Boeck, professor of dermatology at the University of Christiania (Oslo), has left a tradition which was the subject of a long and interesting discussion at a meeting of the Norske Medisinske Selskap last year. The paper which Dr. E. Bruusgaard read on this occasion is published in *Norsk Magazin for Laegevidenskaben* for December, 1928, and the report of the discussion which followed it appears in the same journal for October.

Prof. Boeck used to arouse many protests among his colleagues on account of his teaching that the so-called specifics, potassium iodide, and mercury, are symptomatic remedies which not only fail to eradicate the disease, but also paralyse the body's natural defences, with the result that the disease runs an atypical course, and inflicts serious injuries on certain internal organs, particularly the central nervous system. Only when the body failed to react satisfactorily, and the disease seemed to run its course unchecked, did Boeck fall back on these two drugs. His colleagues, on the other hand, followed more conventional lines. They taught that mercury must be given in every case, in such-and-such doses, and for so many years. It was, therefore, natural that the generations of medical students brought up in this controversial atmosphere should have been curious to check such conflicting claims in the light of subsequent events. Two of these men have, in their turn, become leaders of the medical profession in Norway, one of them, Dr. Bruusgaard, having succeeded Boeck in the Chair of Dermatology, the other, Dr. S. Dahlström, being chief of the Psychiatric Department of the Ullevaal Communal Hospital in Oslo.

The task which Prof. Bruusgaard set himself was the personal examination of the survivors of the syphilitic patients who had attended Boeck's clinic between Jan. 1st, 1891, and Dec. 30th, 1910. Of the 2181 patients suffering from primary and secondary syphilis in this period, 1388 were women and 793 were men. Prof. Bruusgaard's inquiries into their subsequent fates were begun in 1925 and provisionally ended in 1927. A small number of patients were also examined who had contracted syphilis since 1910, and who had not received specific treatment. On re-examination, the patients were subjected to a very careful examination of the heart, two skiagrams being taken in different planes, and to a routine neurological examination. The cerebro-spinal fluid was examined only in a few cases, but the Wassermann reaction of the blood was carried out in most cases.

After grouping his material in several tables, the first showing the frequency of such complications as iritis and periostitis, the second showing the subsequent careers of the patients whose infection dated back three to four decades, and the following tables showing what happened to the patients whose

infection was more recent, Prof. Bruusgaard summed up his findings as follows:—

From 3 to 40 years after infection an examination was made of 309 patients who were still alive and a study made of the 164 patients who had died, and the cause of whose death was known. Of the total of 473 ex-patients, alive or dead, 131 were clinically symptom-free and gave a negative Wassermann reaction. There were 70 who were clinically symptom-free, but gave a positive Wassermann reaction. There were 67 who suffered from diseases of the blood-vessels, 13 who suffered from general paralysis, and 6 who suffered from tabes. As practically all the cases of general paralysis in Oslo and the neighbourhood are recognised as such and included in the returns, only a negligible quantity being lost sight of, it may be argued that the 13 patients who developed general paralysis represented almost the sum-total developing this disease out of the 2181 patients whom Boeck refused to treat with the so-called specific remedies. In other words, only 0·6 per cent. of all these patients developed general paralysis. While Prof. Bruusgaard took care not to commit himself to a definite opinion on the wisdom of his predecessor's attitude of masterly inactivity, he pointed out that the statistics he had just presented proved very clearly that, in a considerable percentage of cases, the body is by itself able, not only to arrest the progress of syphilis, but even to eradicate this disease. This observation gives support to the modern tendency to combat syphilis by means of non-specific remedies which augment the natural defensive forces of the body—witness the success of the malarial therapy of general paralysis.

Does Specific Treatment Favour Development of G.P.I.?

In the discussion which followed Prof. Bruusgaard's paper, Dr. Dahlström pointed out that the most commonly accepted computation of the frequency with which cases of syphilis end in general paralysis is about 4 per cent. During the 18 years he had practised as a psychiatrist, Dr. Dahlström had been on the look-out for paretics among Boeck's old patients, but had hardly found any, whereas patients who had been treated with mercury frequently reappeared with signs of general paralysis. Boeck used even to claim that not one of his own patients had ever developed general paralysis, and every time he met Dr. Dahlström he would ask if he had seen any of his (Boeck's) patients suffering from general paralysis. When the answer came in the negative, he would pass on, remarking, "Didn't I say so!" Among the 320 cases of general paralysis treated at Ullevaal, only two were found to have been treated on Prof. Boeck's principles. Even in these two cases it could not be proved beyond a doubt that they had not been tampered with, i.e., that they had not received mercury from some other doctor. Boeck used to teach that even the smallest dose of mercury made the prognosis worse for the patient. In further confirmation of Boeck's teachings, Dr. Dahlström drew attention to the rarity with which tramps and other light-hearted birds of passage—persons who do not submit to specific treatment—develop general paralysis. It is also rare in the coloured races in their native haunts, but it is not so among negroes living in large towns where hospitals, doctors, and specific remedies are available. Dr. Dahlström also noted that a past record of syphilitic meningitis or cerebral disease does not forecast general paralysis at a later stage. Indeed, among the 95 patients he had treated in hospital with these manifestations of syphilis, he had not seen one subsequently develop general paralysis. This observation did not, of course, refer to those cases of general paralysis which were ushered in by signs of meningitis or lues cerebri.

The Frequency of Syphilis at Necropsy.

Speaking at the same meeting, Prof. Harbitz gave a statistical review of his post-mortem findings at the Rikshospital in Oslo during the 28-year period, 1900–27, in which 6529 necropsies were made. In 369, or 5·65 per cent., definite syphilitic changes were found, and in 303 of these cases (4·68 per cent.) syphilis was regarded as the cause of death. The blood-vessels were involved in 202 cases, the nervous system in 55, the digestive tract in 28, the respiratory tract in 18, the skin in 24 (incidental findings, not causes of death). Amyloid disease was found in 13, severe anæmia in 3; the bones were involved in 8, the testicles in 3, and the kidneys in 8 cases. There were also seven cases in which secondary syphilis was an incidental find. The most important point to note in these findings is the predominance of the blood-vessels and the central nervous system as seats of syphilis that proves fatal. And syphilis of the arteries and heart was three to four times as common as syphilis of the central nervous system. With regard to the suggestion that tertiary visceral syphilis has increased in frequency, Prof. Harbitz had grouped his material in two 14-year periods. In the first, 1900–13, there were 3272 post-mortem examinations, among which syphilitic changes were found in the organs in 214 cases—i.e., in 6·54 per cent. In the following 14-year period, 1914–27, there were only 155 such cases among 3318 necropsies—i.e., only 4·82 per cent. Prof. Harbitz added that his post-mortem findings must be regarded as representing only a fraction of the total number of syphilitics examined post mortem.

The Expectation of Death of the Syphilitic.

During the same discussion, Dr. E. H. Hansteen produced some interesting figures wherewith he calculated the chances of syphilitics dying of their disease. His material consisted of the post-mortem records of the Ullevaal Communal Hospital in Oslo in the period 1907–25. Among the 11,477 post-mortem examinations there were 465 cases in which definitely syphilitic changes were found in adults (acquired syphilis) and 50 other cases in which the changes found were probably syphilitic. This gave a total of 515 cases—i.e., an incidence of 4·49 per cent. In 247 cases syphilis was the cause of death (2·17 per cent.), whereas in 268 other cases (2·32 per cent.) syphilis was an incidental find and not the principal cause of death. Among the 247 fatal cases of syphilis, there were 161 in which it was located in the heart and vascular system, 72 in the central nervous system, and 1 in the liver. There were three cases in which it gave rise to general amyloid disease. Also, in the 268 cases in which syphilis was an incidental finding, the structures most often involved were the heart and blood-vessels. In the same period congenital syphilis in infants was demonstrated in 101 cases; it was the cause of death in 72, and an incidental finding in 27. There were also two cases of late congenital syphilis in adults. If the cases of acquired syphilis be added to the congenital forms of the disease, there is a total of 616 cases (5·36 per cent.), of which 321 (2·78 per cent.) proved fatal on account of this disease. Assuming that the 11,477 persons examined post mortem at the Ullevaal Hospital were a representative sample of the population of Oslo, Dr. Hansteen proceeded to make the following calculation. With a population of about 250,000, and an average annual death-roll of 2700, there must have been approximately 59 deaths every year from acquired syphilis. The notifications of acquired syphilis in Oslo range from 400 to 900 a year, the average for the period 1907–25 being 627. To this average Dr. Hansteen added about 30 per cent. in order to make good the new cases of syphilis which elude notification. By this means he arrived at a total of 836 new cases of syphilis every year. As approximately 59 persons die every year of acquired syphilis in Oslo, the calculation is made that 7·06 per cent. of persons contracting syphilis will ultimately die of this disease. The actuarial value of this calculation is, of course, impaired by the element of guessing in it, but it remains nevertheless a useful starting-point for similar investigations and calculations by other pathologists.

THE LANCET.

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THE KING'S ILLNESS.

FOR the first time for seven weeks HIS MAJESTY'S illness is not made in this column the subject of an official bulletin, a fact which proves how correct have been the prognostications of his advisers when they were able from time to time, in the most cautious terms, to report some progress. There is no doubt that the regular bulletins, containing information made up of the salient facts for those who could appreciate them in their proportions and interrelations, have been extremely valuable to the KING'S anxious subjects. Never has it been disguised for a moment that HIS MAJESTY was seriously ill; never has the temptation to allay widespread apprehension been yielded to, so that undue stress was laid upon even undoubted steps towards recovery. Void of rhetoric, and in as simple phraseology as the language of science permits, the story has been told from week to week in the right way.

The bulletins since the last issue of THE LANCET have been signed by Sir STANLEY HEWETT and Lord DAWSON, two only of them carrying also the signature of Sir HUGH RIGBY, whose silence implies a satisfactory issue to surgical interference. The bulletins tell the same story of very slow progress, a "quiet day" and a "restful day" culminating in an affirmation that HIS MAJESTY continues to make slow progress. No medical man will fail to appreciate how anxiously the patient must continue to be watched through an extended period of time, for an illness so prolonged and so severe must always leave the subject liable to an addition of exhaustion which has throughout been dangerously pronounced. That is to look upon the gloomy side; but at the long last we may permit ourselves to indulge in happy anticipations of convalescence.

TRAINING IN BIOLOGY.

TWO leaflets issued last week from the Ministry of Agriculture and Fisheries lay stress on a large and growing demand, existing throughout the British Empire, for men trained in biology. The new propaganda is, as would be expected from its place of origin, largely concerned to point out the need, alike at home and in our colonies, for biologists to combat insect and fungoid diseases, to breed improved varieties of crops, to advise on livestock and its breeding while improving meat and dairy produce, to fight animal diseases, and to provide scientific information in respect of the storage and transport of agricultural products. The Ministry suggests that there is a lack of facilities in our schools and universities for the training of biologists fit to discharge such duties, and that there is a dearth of school teachers able to impart knowledge of a branch of science which many persons to-day would consider to be a desirable part of the regular school curriculum. In both leaflets tabular statements occur which testify to the increase of research and advisory service, for England and Wales, that has been financed by the Ministry of Agriculture in the last ten years, the experience of Scotland being similar. The number of posts available and, at the same time, the demand for biological research has grown more acute year by year, and the opportunities for the employment of special biological equipment continue, and will continue, to expand. The message from the Ministry of Agriculture and Fisheries is a practical one, being—Here are openings for useful employment which are not being filled, and men are not being trained to fill them in sufficient numbers.

The Ministry of Health and the General Medical Council will be in accord with this message, for the training of the medical student in biology presents in many places a difficult problem, adequate opportunities for teaching not being forthcoming. In speaking of medical education, it is true, we are thinking of biology only in simple terms as a school subject; the ground-work must be done, while consideration may be left aside of the many directions in which biological research of the most highly specialised character plays its part in therapeutics. Biology, physics, chemistry, and biochemistry are the fundamentals of the medical curriculum, a proper acquisition of which must be obtained if anatomy, physiology, and, in due course, the principles of pathology are to be mastered; and a dearth of instruction in biology has produced a definite difficulty in medical education. Whether any change of policy may have to be adopted by the General Medical Council for lightening the burden of our medical curriculum, or whether the existing pattern be retained, it must be equally embarrassing that, of the three great preliminary subjects, one cannot be taught with facilities proportional to those provided for teaching the others. And it is doubtful whether we fully recognise, in the education of medical students, the high significance of training in biology, a default which an address[1] by Dr. F. A. E. CREW, Professor of Animal Genetics at Edinburgh, should remedy. Speaking on the position that biology should occupy in education, Prof. CREW points out that general education should be concerned with "the development of the art of living, with teaching the developing individual how to think and how to feel and how to seek and gain opportunities for exercising these faculties." Following on this definition, he points out that as the scholasticism of the Middle Ages gave way to the humanism of the Renaissance, so the *literæ humaniores* must give way to education in science, for he believes that science could replace in the school curriculum,

[1] Nature, Jan. 12th, 1929, p. 54.

and replace adequately, the humanistic philosophy of life. This thesis he supports eloquently, pointing out that biology has progressed towards the method of experimental analysis, while its conclusions are based increasingly upon experimentation, so that biologists speak of facts that cannot be denied any more than their connexion with the welfare of mankind. Thus firmly set upon its foundations biology becomes a fitting school subject.

Medical men want no convincing that biology could be included in a normal school curriculum with great advantage to pupils of all sorts—it is precisely that omission which introduces the difficulty for the General Medical Council in deciding how far the overcrowding of the medical curriculum could be relieved at the beginning of the course. It is clear that those who have charge of medical education cannot ask students of medicine before registration to satisfy them that they possess a standardised knowledge of biology, while many of those students cannot obtain a practical opportunity of studying the subject at all, and the gap has still to be filled by classes in the medical school itself. But if biology should thus take its place in the general scheme of education, the greatest pains must be taken to avoid, in the early stages of inculcation, any approach to specialism. The subject will have to be taught as the background of zoology, botany, and physiology, and also as one that requires the assistance of chemistry and physics for the appreciation of its phenomena.

NEUROSIS AND WORK.

A DISCUSSION on mental hygiene, reported in THE LANCET of Jan. 5th, brought from Dr. EDWARD MAPOTHER a comment which emphasises the existence of diametrically opposed modes of treatment of the neurotic or the neuropath. Is he to be shielded from stress and have his life made easy for him, or is he to be taught the doctrine of courage and made to struggle against the risk of breakdown? Dr. MAPOTHER upholds the second alternative, and notes with undoubted truth that much of the best work of the world is done by potential neuropaths putting up a great fight against the risk of a breakdown. PIERRE JANET, who still stands unrivalled as a clinical observer, is less hopeful, and with many patients adopts the attitude that their *tension psychologique*—or vital urge, as we might call it—is so low that their life task must be adjusted to it. Yet another aspect is to be found in Sir JOHN GILMOUR'S address at the Annual Congress in St. Andrews of the Scottish Education Institute, when he warned students against the danger of breakdown from educational over-pressure, and made the shrewd observation that girls do not always succeed in treating the demands of learning with the philosophic calm which boys are able to command. His theme has been given popular expression in the saying, "If you give a girl too much to do she'll break down; if you give a boy too much to do he won't do it." Often enough the clinician, dealing with adult breakdowns ascribed to overwork, is told that the overwork was unnecessary, that the patient drove himself harder than he needed; in short, that he overworked because he was neurotic. JANET made a group for such cases, giving them the title of *les scrupuleux*, and it is not sufficiently recognised that many nervous people are over-scrupulous, over-critical of themselves, and a prey to a restless urge to perfection that can never be reached. In the same person these qualities can lead to brilliant and original work or serious breakdown, or both. The symptoms often fall into the category of obsessional states, and Miss MAY SMITH and Dr. MILLAIS CULPIN, working for the Industrial Fatigue Research Board, have made the observation that these subjects produce results on the MacDougall-Schuster dotting-machine that cannot be approached by any subjects free from nervous symptoms. It is neurotics of this type whose life is too often ruled by the proverb that what is worth doing is worth doing well. For them such counsel is pernicious; they rarely need urging to further exertion, and require rather advice on saving themselves from those introspective criticisms and doubts which, when exaggerated, form the pattern of their nervous breakdowns.

The position of the sufferer from pathological anxiety is different. Though it must not be supposed that there is a clear diagnostic line between the two types, certain distinguishing features may be recognised. The people described above may suffer acutely from anxiety in certain situations—as when alone, or in a crowd, or on a height, according to their individual phobia—but usually have no bodily symptoms, not even a rapid pulse, except when they are actually struggling against an obsession. The patient with anxiety neurosis, on the other hand, will often exhibit physical symptoms ranging from palpitation and sweating, to indigestion and headache, and has nearly always a rapid pulse. The latter type, whose anxiety is unfitting to the circumstances and arises from sources in his unconscious, must often, in the absence of facilities for psychological treatment, be counselled to admit the existence of his troubles and carry on his work in life with such extra effort as would be necessary with a physical disability. The research workers mentioned above have distinguished between neurotic symptoms and neurotic disability, for in some manual occupations people were found doing good work without nervous breakdown, in spite of the presence of severe anxiety symptoms. It must, however, be emphasised that the symptoms remained; nothing in the work stimulated them, but we may suppose that a less fortunate choice of occupation would have resulted in disability. A great amount of sickness results from anxiety states or physical conditions arising out of them, and it is only by a close study of each case that one can strike the right balance between allowing the patient to give way too readily and failing to recognise when his symptoms make work impossible. A pitfall always to be avoided is the easy assumption that hard work per se can cause nervous breakdown, an assumption contrary to all modern psycho-pathology. Worry often arises from causes within the patient rather than from external working conditions, and it is a human failing to turn aside from the consideration of inner troubles if something external can serve as a scapegoat. Neurotic symptoms are a sign of disharmony, of maladjustment to the demands of life, and if external stress exacerbates them, they may serve as a means of escape from that stress; they are, nevertheless, real to the sufferer, as real as any more obvious physical disorder, and to deny this reality is an elementary error that deprives the one who makes it of any influence he might otherwise possess. To understand the reality is to go far towards attaining that coöperation with the patient which will enable us to give him courage to bear the stress of life or to make such reasonable concessions and adjustments as his emotional difficulties require.

BRONCHO-PNEUMONIA.

THE threat of influenza, which cannot be overlooked, makes the problems of broncho-pneumonia, especially when young subjects are attacked, of particular interest. Each year, as winter proceeds, the practitioner has to grapple with a number of cases of acute respiratory disease. Although most of these are of the minor kind, typified by the "common cold," which causes merely a few days' discomfort to the individual, they provide the source of infection for a large number of serious cases of broncho-pneumonia. The public finds it difficult to believe that the cause of the common cold is still unknown and, indeed, it seems curious that we cannot ascertain whether the bacteria commonly found—pneumococci, streptococci, *B. influenzæ*, *M. catarrhalis*, *B. septus*—are primarily responsible, or are secondary associates of an undiscovered filterable virus. There is general agreement, at any rate, that the more serious complications, such as broncho-pneumonia, are caused principally by the pneumococcus, streptococcus, and influenza bacillus in varying combination. In recent years the influenza bacillus and the hæmolytic streptococcus appear to have played a prominent rôle. Acute lobar pneumonia has not the same close relation to these minor infections as broncho-pneumonia. Its seasonal incidence is different, and the well-defined virulent types of pneumococci which cause the majority of cases are not those found in the milder catarrhal infections. Nevertheless the pneumococci of lower virulence, which in an adult may only cause a simple coryza, can be responsible for pneumonia in weakly subjects and children.

We cannot yet distinguish clinically and bacteriologically between harmless colds and those which may become dangerous. Probably there is no essential difference, and the result depends upon the relation between the size of dose of the infection and the individual resistance. The term "influenzal cold," though loosely used, is popularly supposed to denote a graver condition than a simple cold, and there is something to be said for its application to a type of cold which closely resembles and is probably often identical with the simple influenza seen during epidemics. It is characterised by a more abrupt onset, a higher temperature, more severe headache, greater aching in the back and limbs, and a drier catarrh. Experience shows that such colds are more likely to show spread to the lower respiratory tract, the danger sign being the appearance of râles, coarse, medium, or fine, scattered through the lungs, especially in the lower lobes. These signs indicate bronchiolitis, which is the essential lesion of influenza. They are apt to be very persistent, and so long as they exist there is a possibility of broncho-pneumonia. Infants under 3 to 4 months old who get a nasal catarrh almost invariably have an extension to their bronchi and often a broncho-pneumonia. An infection which may be negligible in an adult can cause fatal disease in a young child who has not yet been immunised by frequent sub-morbid doses of infection. In spite of every care broncho-pneumonia may arise in patients who apparently have a mild catarrh; but undoubtedly strict observance of the rule that a febrile patient must stay in bed would do much to prevent complications. Patients should be kept in bed until the temperature has been normal for 24 hours or, in more severe cases, until all râles have disappeared. When broncho-pneumonia supervenes the signs may appear on the third or fourth day without any previous drop in the temperature, or they may occur after apparent recovery four to ten days later. Fulminating cases, with lung involvement from the first, are not so often seen in inter-epidemic periods.

We know no drug which will check an influenzal cold, and it is difficult to improve upon the old-fashioned remedy of promoting profuse perspiration by a hot drink of lemonade, with or without whisky, and grs. 10 of Dover's powder, and going to bed with a hot-water bottle and extra blankets. Abundant fluids should be taken, up to 4 or 5 pints a day, and as there is no desire for food the addition of glucose, 1 lb. to each 3 pints of lemon water, will provide all the nourishment needed by the patient. With any sign of lung involvement absolute rest, physical and mental, must be insisted upon. Too often the patient is allowed to get up for excretory purposes so long as he is physically able to do so, but in spite of protests the doctor should be adamant upon this point. The nurse must anticipate the patient's wants and refrain from fussiness. Much unnecessary exertion is caused by reaching out for drinking vessels and sputum mug, by routine washings, and removal of garments. A single garment, slit down the middle, light bed clothes, and a cool room will help the patient to lose heat. Windows should be open day and night, but the need for fresh air should not expose the patient to icy draughts or glaring sunlight. The patient is thirsty rather than hungry, and glucose lemon-water should be taken freely. With this milk can be reduced to 1 pint a day. There is still a misplaced confidence in beef teas, but their nutritive value is magnified and they may be objectionable on account of the amount of extractives they contain. Careful attention to the cleanliness of the mouth will add to the patient's comfort and safety. Three grains of calomel at the onset, followed by a saline, may be given, but thereafter a soap-and-water enema on alternative mornings will suffice. The pain of pleurisy may require strapping,antiphlogistine, poultices, or leeches, but they should not be continued after pain has ceased. A Dover's powder will relieve pain and sleeplessness, and opiates can be continued so long as the bronchi are clear and there is no cyanosis; otherwise all drugs that cause sleep are dangerous.

Undoubtedly the hope of lowering the high mortality from the pneumonias lies in the discovery of some form of specific treatment. Specific chemotherapy has so far failed in connexion with bacterial infections. The use of vaccines has not yet been generally accepted, but the records of those who have used them extensively are undeniably good. As with all methods of specific treatment they must be used as early as possible. Their object is to control the infection at the beginning and prevent dangerous developments; they can give little or no assistance when toxins, maybe in fatal doses, are already fixed in heart and nerve cells. The vaccine which has been most used is one containing equal numbers of pneumococci, streptococci, and influenza bacilli, and a suitable dose for an adult is 100 millions of each organism, though much larger doses can be given with safety. With such treatment given within the first 24 hours from the onset in a large proportion of cases, it has been shown that the temperature falls to normal within the following 24 hours, but with each day's delay less striking results are obtained, and when injection is delayed until the fourth day the results are little influenced. The immediate action of the vaccine is non-specific, but specific antibodies are produced later and add to those formed naturally. As specific antibodies are not present for several days, the patient is unsensitised and no negative phase supervenes. It is the fear of the

negative phase which has hindered the use of vaccines in acute infections. In chronic infections specific antibodies are present, the patient is sensitised, and reactions are easily produced, so that when vaccines are used for delayed resolution in pneumonia, or are not used until the patient has been ill for more than five days, caution is required, and the initial dose should be small—for example, 5 millions. The early administration of vaccine necessarily entails early diagnosis. The abrupt onset and striking symptoms of lobar pneumonia should make its recognition possible before consolidation occurs, but with broncho-pneumonia the onset is often insidious, and the fact that a case has taken on a graver aspect is not always recognised at once. It is not, however, necessary to wait for undoubted signs of pneumonia, since injection in the prepneumonic stage will, in most cases, cut short the infection and prevent the onset of the grave complication.

With early specific treatment, absolute rest, and fresh air, much can be done to prevent circulatory failure, the treatment of which occupies so much space in text-books. The heart is best helped by feeding it, and the best foods are oxygen and glucose. With the slightest indication of cyanosis, oxygen must be freely administered through a nasal catheter or with a mask. The futile method of the funnel, however, still survives and brings oxygen treatment into discredit. When circulatory failure occurs the patient is in a parlous condition. One by one the drugs upon which we formerly relied have been discredited, and the difficulty of treating poisoned organs incapable of response is now recognised. The seat of circulatory failure has passed with our increasing knowledge from the heart to the medullary centre and the capillaries. When the heart is at fault adrenalin is the most useful drug since it augments and accelerates its contractions. For capillary dilatation pituitary extract is available, and when failure of the vasomotor centre occurs strychnine has a certain limited field. Alcohol, the most popular of all drugs in pneumonia, has a fleeting reflex action upon the heart from irritation of the mucous membrane of the mouth and stomach, but after absorption it has no apparent action upon the heart or blood pressure and it is difficult to see how its action in increasing the flow through the skin at the expense of the internal organs is required. Circulatory failure is a complicated matter, and it is at present impossible to assess the various factors concerned, each of which requires a different line of treatment. Our hope lies in the prevention of circulatory failure and not in its treatment.

Convalescence may be a tedious matter and râles a long time disappearing, but the patient should not be allowed to pass from care until the chest is clear. Chronic fibrosis is perhaps the commonest chronic lung disease, and the most frequent cause is a broncho-pneumonia. Much future ill-health could be prevented by greater care during convalescence, and the lungs after broncho-pneumonia should be as carefully watched as the heart after acute rheumatism.

INTERNATIONAL HOSPITAL CONGRESS.—This Congress will assemble at Atlantic City, New Jersey, U.S.A., on the morning of June 13th. It will be immediately followed by the annual convention of the American Hospital Association. The Congress is the first of its kind and in connexion with it there will be an exhibit of plans and models of modern hospitals, of various types of hospital equipment and supplies, and of statistical data relative to the care of the sick throughout the world. The purpose of the Congress is to bring together those interested in hospital administration, construction, and organisation.

Annotations.

"Ne quid nimis."

CONDITIONS OF CHILDBIRTH IN INDIA.

THE disturbance created by Miss Mayo's book, "Mother India," has by no means died down, and acrimonious controversies arise from time to time over one or other of its criticisms of Indian social life. It is not our purpose here to reopen any general discussion of the merits of this work, but an article by Miss Eleanor Rathbone in a recent *Hibbert Journal*, entitled "Has Katherine Mayo slandered 'Mother India,'" lays especial stress on her remarks on childbirth, and it seems worth while to consider what the present position really is, and whether any practical means of improvement exist or can be introduced. That there is abundant evidence of very excessive mortality of both mothers and infants must be at once conceded. Indian vital statistics are notoriously inaccurate, but as Miss Rathbone points out, any error in the calculated death-rate can safely be assumed to lie in the direction of deficiency rather than excess. When, therefore, it is stated on good authority that a maternal mortality of 20 per 1000 births is a very conservative estimate we may regard the figure as certainly not an exaggeration of the facts. It has to be compared with a British figure of between 4 and 5 per 1000; similarly the infant mortality of about 300 per 1000 for urban and 175 for rural districts in India compares unfavourably with a general rate of 70 for England and Wales and 35 in Dunedin, New Zealand. These figures leave so large a margin for any possible error that they can be allowed to speak for themselves. Besides, the main proposition has long ago been conceded by the leading Indian reformers themselves.

The causes of this sad and discreditable state of things are not far to seek, for anyone with experience of Indian maternity work knows that the conditions under which labour occurs—with comparatively few exceptions amongst the more prosperous and better educated people of the towns—are truly appalling. This is a matter on which Miss Mayo could hardly have exaggerated, even had she intended to do so. When she says that the lying-in woman, being conventionally unclean, is installed in the darkest and dirtiest closet available, and provided with filthy rags that have been specially set aside for her use, that air and light are carefully excluded and the room is filled with the fumes of a charcoal brazier; that the *dai* or hereditary midwife in attendance is not only illiterate but notably dirty in her person, and regardless of the most elementary rules of cleanliness; and that the patient's diet is on starvation lines and utterly unsuitable—when she says all this, and also points out that the mother is herself usually the product of an early marriage, and often of the purdah system, she is only stating what is a commonplace to every practitioner in India. All these factors react more or less on the infant as well as the mother, and what chance it has of making good is still further weakened by its being fed on poor breast milk, or over-diluted cow's milk drawn and kept under more than doubtful conditions, and often also by the administration of opium to still its cries of hunger and pain. The purdah system, coupled with a general defiance of every law of hygiene, is also responsible for more than vague ill-health. Osteomalacia and rickets are common, as one would expect, and the zenana is naturally a hotbed of tuberculosis. What, asks Miss Rathbone in effect, can be done to secure the mitigation of these and other similar ills in the future? And must not Westerners, who have been responsible for the government of the country for so long, take blame to a certain extent for their continuance?

There has certainly been a tendency in the past to accept Indian social customs as inevitable, and to disclaim responsibility for their perpetuation, and so

far we believe the British administration must bear its share of the discredit. The official efforts that have been made to improve maternity conditions have in the past been mostly feeble and sporadic. In the last half century, however, some significant changes have occurred, in this as in other social departments. The Parsees of Bombay are, of course, not actually Indian in origin, but they have assimilated many Hindu customs, and their communal life is still largely dominated by a comparatively illiterate priesthood. In spite of this, however, and the violent opposition he at first encountered from a large proportion of his compatriots, the campaign initiated by Sir Temulji Nariman, M.D., for the introduction of modern maternity measures, has long ago been brought to a triumphant conclusion, and the Parsees, who used to be as archaic as the Hindus in this respect, have now as good obstetric facilities as any community in the world, and make use of them to the full. This advance could not have been made without a parallel introduction of education, particularly for the women, and Miss Rathbone justly observes that this is the first and most pressing need of India. Along with this general educational movement must go the supersession or training of the *dais*. It has been the fashion until recently, particularly amongst the medical profession, to contend that the attempt to make them into responsible assistants to deal with the *dai* is hopeless. We think this view is wrong. India, in spite of the legendary pagoda tree, is a poor country, and to wait for an adequate supply of midwives trained on conventional lines would be to wait for a very long time. The *dai* is an awkward problem, but experimental schemes on a small scale have lately shown that it is not impossible to persuade her to undergo short courses of practical training which, in successful cases, convert her from a deadly menace into a useful adjunct of village life. Rural midwifery presents a task whose very fringe the regular nursing profession will never be able to touch, and the regularisation of some inferior maternity agency, such as the *dais*, is even more necessary than the provision of elementary medical aid in the smaller villages, where fully qualified doctors are not available. The establishment of infant welfare centres in the larger towns has already done much to open up the allied question of antenatal instruction and to supplement the work of the hospitals as regards infants and young children, and the same principle might with advantage be extended to the districts, where it would be a valuable reinforcement to the existing medical agencies.

OPERATION FOR CONGENITAL STENOSIS OF THE BILE-DUCTS.

WHEN there is congenital abnormality of the bile-ducts the smallness of the structures involved and the associated jaundice have usually deterred surgeons from operating, and comparative failure seems to have attended the efforts of those who have made the attempt. But a fresh stimulus to the surgical treatment of this condition is given by the work of W. E. Ladd,[1] of Boston. He operated on 11 out of a series of 20 children with narrowing of the ducts, and found that eight were suitable for surgical treatment, six of whom recovered. These six include one infant of 3 months with atresia of the common duct, for which choledochoduodenostomy and cholecystostomy were performed; one of 5 months with the same abnormality which was cured by cholecystgastrostomy; one of 3 months with stenosis of all three ducts, successfully treated by cholecystostomy and dilatation with a probe; and one of 4 weeks in which obstruction of the common and cystic ducts was relieved in the same way. In the other two cases partial obstruction of the common ducts was satisfactorily treated by cholecystduodenostomy, but the patients were 5 years old, and the condition hardly seems to deserve the term congenital stenosis of the bile-ducts as it is understood in the literature. As Ladd remarks, both the nature and degree of abnormality vary considerably, so that different operations are necessary in different cases. For small infants with an obstructed common duct he recommends anastomosis of the common duct to the duodenum over a catheter, pointing out that introduction of a catheter into the duodenum through the gall-bladder and common bile-duct is an important part of the technique, as it ensures patency of the anastomosis which is otherwise difficult to obtain on account of the smallness of the structures. He thinks that operation is desirable as soon as the diagnosis seems reasonably certain, before there is wasting or concurrent disease, and he says it may be undertaken with expectation of success in any case in which either the common duct or the gall-bladder has a patent connexion with the liver. Only those who have seen such cases in life and examined the structures at autopsy can fully realise the technical difficulties of the operations which he advocates. But the fact that inactivity means certain death, while intervention evidently can be successful, undoubtedly justifies his plea that it should be tried more often. It will be interesting to learn the subsequent history of the cases operated on successfully.

[1] Jour. Amer. Med. Assoc., 1928, xci., 1082.

THE ÆTIOLOGY OF PELLAGRA.

IT is now more than a year since the fact was established that vitamin B is a dual entity, of which one part only, now called vitamin B 1, represents the previously recognised antineuritic or anti-beri-beri factor. The two factors have a somewhat similar distribution among foodstuffs, and yeast is particularly rich in both. Since yeast in some form has been almost universally used as the source of vitamin B in dietary experiments, it has come about that nearly always the two factors have inadvertently been given together. The second factor, vitamin B 2, has been further protected from discovery by the circumstances that, in experiments on the rat, when both factors are withheld the animal always succumbs first to the neuritic symptoms, and dies before any sign of the second syndrome has time to develop. In other words, the reserve of vitamin B 2 always outlasts that of vitamin B 1, when neither vitamin is offered in the food. H. Chick and M. H. Roscoe [1] found, last year, that an alcoholic extract of yeast, in which vitamin B 1 alone is present, cures the neuritic symptoms and keeps the rat alive until the second deficiency has time to manifest itself. The latter is marked by ophthalmia and skin symptoms—i.e., loss of hair and a characteristic dermatitis on paws, ears, and neck. The most interesting feature of the discovery lies in the identification, by J. Goldberger [2] and his colleagues, of this syndrome with the well-known disease of pellagra. They have proved that pellagra in man may be cured and subsequent relapses prevented by the administration of dried brewers' yeast, as well as by a number of other foodstuffs. They used a commercial preparation of the Harris Laboratories, Tuckahoe, N.Y., at first in a daily dose of about 50 g.,[3] but later 15 g. was found sufficient.[4] In the outbreak of pellagra which followed the deprivation caused by the Mississippi floods,[5] yeast was prescribed as the routine treatment, with canned salmon, beef, or tomatoes as an alternative. The ætiology of pellagra is not, however, completely cleared up by these experiments, since the exact relation of pellagra to maize-eating is not yet fully established. The disease occurs on a large scale entirely in maize-eating countries, but it is not yet known whether the whole maize grain is pellagra-producing or whether only a certain fraction,

[1] H. Chick and M. H. Roscoe: Biochem. Jour., 1927, xxi., 698.
[2] J. Goldberger and R. D. Lillie: U.S.A. Public Health Reports, Washington, 1926, xli., 1025.
[3] Goldberger and W. D. Tanner: Ibid., 1925, xl., 54.
[4] Goldberger, G. A. Wheeler, Lillie, and L. M. Rogers: Ibid., 1926, xli., 297.
[5] Goldberger and E. Sydenstricker: Ibid., 1927, xlii., 2706.

left after milling, is responsible, as in the relation between rice and beri-beri. It should be easy to ascertain whether vitamin B 2 is present in maize, before and after milling. It is curious that some maize-eating communities, such as certain natives of South Africa, do not suffer from pellagra. The explanation of their immunity remains to be worked out; it may be traceable to a different process of milling. Whatever the exact circumstances contributing to its causation, the prevention of pellagra in man is in sight. The disease, like beri-beri, will be stamped out as soon as it is realised that it is poor economy for a State to allow its citizens to suffer from a disease which can be avoided by the provision of a more adequate diet.

BAYLISS-STARLING MEMORIAL FUND.

MANY of our readers will remember that an appeal was issued last year (see THE LANCET, 1928, i., 718) for subscriptions to provide a memorial to the late Prof. Sir William M. Bayliss and Prof. Ernest H. Starling. We learn that the results of this appeal have been such as to enable the committee to fulfil the objects which they had in view. The sum collected will, apart from subscriptions which are still arriving, amount by the end of January to something over £2600. Large contributions have been made by physiologists abroad, particularly in America and Germany, and from many distinguished members of the practising side of the medical profession. The Memorial Fund Committee wishes it to be made known how the sum raised will be disposed of. A small part of it has been employed in the preparation of a simple memorial tablet in bronze. This, which has been designed by Prof. A. E. Richardson, F.R.I.B.A., bears the words:—

WILLIAM MADDOCK BAYLISS, F.R.S.
1860 1924

ERNEST HENRY STARLING, F.R.S.
1866 1927

It is proposed to erect it in the entrance-hall of the department in which they spent so many fruitful years, where it will occupy a suitable place above the bust of William Sharpey. Most of the money, however, will shortly be transferred to the University of London to be held in trust for the creation of a Bayliss-Starling Studentship, the object of which will be to enable a selected graduate in science, or graduate or undergraduate in medicine, of suitable standing, to spend a year or more in acquiring a knowledge of physiology and biochemistry preparatory to commencing research work in that subject.

ULTRA-VIOLET LIGHT IN MENTAL HOSPITALS.

IT has become the custom to regard the provision of ultra-violet ray apparatus as a sign of progress in mental institutions, and to assume that committees which have the welfare of their patients at heart will add this form of therapy to their equipment. Its use is, however, still limited, as shown by the recent inquiry of the Actinotherapy Subcommittee of the Royal Medico-Psychological Association. A letter addressed to 200 mental hospitals elicited 47 replies, from which it was learned that 16 institutions had ultra-violet apparatus and eight more hoped to have it soon. The discussion on the subject at the Section of Psychiatry of the Royal Society of Medicine on Jan. 8th showed that the medical staff of mental hospitals who have had actual experience of "artificial light" are convinced that it is justified. If there are any to whom irradiation has proved itself a failure, they did not attend to put their experiences before the meeting. With certain reservations as to selection of cases and administration by experienced physicians—reservations which apply to this treatment in all forms of disease—the psychiatrists present agreed that real benefit had been obtained by their patients. Dr. Dove Cormac reported, on four years' experience of ultra-violet light at Parkside Mental Hospital, that the patients had shown a marked increase of body-weight, improvement in appetite and muscular activity, a slight average decrease in blood pressure, and distinct exhilaration. He held that, while the treatment was bad for hyperthyroidism and melancholia with agitation, it undoubtedly curtailed the depressive period in the manic-depressive psychosis, benefited mild melancholia and anergic stupor, and rendered the delusional patient more amenable and his delusions less dominant. He had found the carbon arc better than the mercury-vapour lamp. With his conclusions Dr. A. C. Hancock, of Barming Heath, agreed, laying particular stress on the value of local applications for septic foci. Sir Henry Gauvain gave an interesting account of the effects of heliotherapy at Alton on the minds of disabled children. Marked improvement was observed both in "mental age" and in cheerfulness. Dr. G. de M. Rudolf, of Claybury, sounded a warning note by exhibiting a weight chart extending over several years and showing periodic rises. Had only a small part of this chart been available, one of the rises might well have been attributed to the ultra-violet light treatment.

Another aspect of the problem was stressed by Dr. R. Bourdillon, who pleaded for "more light and less invisible radiation" in actinotherapy. The September midday sun in temperate latitudes at sea-level gave half a gramme-calorie of visible light per square centimetre per minute, whereas a patient standing three feet away from a mercury-vapour lamp received only one-hundredth of a gramme-calorie. Therefore 15 minutes of a mercury-vapour lamp was in this respect equal to 18 seconds of September sunlight. He urged that exposure to the mercury lamp should be called ultra-violet treatment and not light treatment. The carbon arc approaches more nearly to sunlight, but varies enormously according to the particular electrodes and other factors. Very little is known, continued Dr. Bourdillon, of the effects of ultra-violet rays, because they have so seldom been administered unmixed, but they certainly lead to the production of antirachitic vitamin D and they burn the skin. The vitamin D can be much more cheaply and easily provided by the oral administration of irradiated ergosterol, while the value of burning is difficult to appraise in general treatment though incontestable in some skin diseases. The visible and near infra-red rays certainly penetrate more deeply. The magnificent results of heliotherapy in surgical tuberculosis are undoubted, but here the effects of ultra-violet rays have not yet been accurately distinguished from those of other factors such as cold air. There was reason to fear that the great utility of ultra-violet radiation in some diseases had caused undue neglect of the even greater value of radiations of longer wave-length for general treatment. Dr. W. A. Potts admitted in the discussion that he had obtained very much better results in hospital patients than in private patients, and he ascribed this to the fact that light treatment in a hospital was a kind of social outing. The nervous patient was reassured by the "old hand," and the particularly depressed patient was always put next a cheerful one. Dr. Albert Eidinow pointed out that the mercury-vapour lamp was designed expressly for acute and subacute disease, to produce a rapid effect and the maximum change in the blood, and that these diseases could not be treated with lamps that gave out a great degree of heat. In mental diseases, as he said, we have a totally different problem and need quite different radiations. The chronic case calls for longer radiation and heat, a pleasant, warm, practically non-erythema-producing light, perhaps best supplied by a very powerful tungsten filament.

There is clearly a difference in outlook between the physician whose object is to improve the health

of his patients in any way possible, and the research worker whose aim is to further knowledge by accurately controlled tests. The mental hospital physician takes a lamp, groups a dozen patients round it, finds that they improve physically and mentally, and that their convalescence is hastened, and declares that ultra-violet light is a valuable factor in the treatment of mental disease. The physical chemist points out that three-quarters of the rays he is using are not ultra-violet at all, that the patients are receiving other kinds of treatment as well, and that many purely psychological factors come in. It is, however, for the scientific worker and the clinician to meet together and to clear up ambiguity, and there is urgent need for research to this end. Till the nomenclature is cleared up no one would deny to the clinician the right to administer and to extol a technique which in actual fact appears to him to do his patients good. The general conclusion seems to be that at the present stage—after all, a very early one—artificial sunlight treatment, particularly the carbon arc, is a good therapeutic measure for mental patients, even though its exponents have not yet distinguished between the various factors which may be responsible for the results obtained.

CHEMICAL WARFARE.

TEN years have passed since the war, and a generation is growing up that knows little of the experiences that led to the almost universal hope that war would become obsolete. That hope now seems remoter, and it is possible that the races of mankind will, like the characters in a Greek tragedy, be driven on to disaster by forces within themselves that use reason as a weapon rather than a guide. "If you wish for peace, prepare for war" is a maxim that, universally used, leads to preparations that progressively increase, and the statesmen of many nations are even now struggling to arrest the increase. One of the first of their efforts was directed towards the exclusion of the use of poisonous gases in warfare, and various international agreements have been signed with that object. Yet there is a belief, freely expressed, that our objections to its use are as futile as were our ancestors' objections to the introduction of firearms in war, and that no nation will, when put to the test, refrain from the employment of all the means at its disposal in spite of paper agreements. Further, it is argued that gas is a more humane weapon than high explosives, inasmuch as its use against the civil population would bring greater and speedier military and political advantage with less suffering and death. The side would win that first produced uncontrollable panic among the home population of the other and, since defence against hostile aircraft is apparently an unsolved problem, and poison gas is easily manufactured almost as a secondary product of industrial chemistry, we must admit the force of the argument and realise that in our next experience of civilised warfare its bodily effects will be brought home to all, irrespective of age or sex. With these considerations as justification, the St. John Ambulance Association has published a brochure by Major F. R. Humphreys, late R.A.M.C.(T.) and Royal Air Force, on Protection of the Civil Population in Chemical Warfare, which describes in simple language the effects of the different poison gases likely to be used, with the defensive procedure to be adopted by the victims, and outlines the special duties that would fall to first-aid units. In the preface Major-General P. S. Wilkinson announces that the manual has the approval of the Chemical Warfare Research Department of the War Office and assumes that detailed organisations will be set up to deal with the work of defence. Medical men who feel the need for information will undoubtedly find the manual useful; it deals only with the material issues immediately concerned with gas attack and makes no reference to wider questions that inevitably arise in the mind of the reader. These questions are, however, frankly faced by Dr. L. P. Lockhart in the January number of the *National Review*. This writer, indeed, considers the questions settled and anticipates a war in which gas attack upon the civil population will be the decisive weapon. He declares that "the hope that the use of gas against civilians can be prohibited is . . . opposed to the whole trend and evolution of twentieth-century warfare in its relation to the economic and scientific needs of the modern State." Viscount Grey of Fallodon is quoted as saying that "it is by bringing home to each succeeding generation what the realities of modern war are, how vastly more catastrophic and destructive it is to the whole population than ever before, that we shall form a public opinion which will help to secure peace," but the argument of Dr. Lockhart, in which he is supported by Mr. J. B. S. Haldane, is that poison gas is so humane that the public can be educated to anticipate its use and "trained to realise that, with the proper measures, they have little to fear." Our possible enemies must not be expected, however, to remain ignorant of these proper measures, and this latest advance in *Schrecklichkeit* will surely go the way of all other warlike inventions. We hope that the wit and goodwill of mankind will succeed in breaking this vicious circle but, if the outlook is as bad as Dr. Lockhart thinks, then it is plainly our duty to prepare ourselves for the work we shall be called upon to do in alleviating the sufferings of the civil population in the next war. The extent of this preparation is wider than one might expect; Dr. Lockhart advocates, for example, that city, borough, and county councils should be responsible for the creation and maintenance of adequate anti-gas defence, and he presses the new and urgent need for the removal of our large hospitals from the centre of London on the ground that they may cease to function in time of war. Perhaps it is well that we should be thus reminded of the alternatives before us.

A CHANCE FOR EPILEPTIC CHILDREN.

THE epileptic boy or girl who has been excluded from school because his fits are so frequent or severe is in an unhappy position. If school is an unsuitable place for him, small homes or crowded streets are more unsuitable still. To the handicap of this disease is added the further handicap of want of education. He grows up literally without a chance in life. Medical men who come across these cases in private practice, or in the out-patient departments of hospitals, will therefore be glad to know that there is to be a further opportunity for London epileptic children to go to a school in the country, where they will receive the education of which they stand so much in need, combined with active medical supervision and treatment. The London County Council has arranged that some 80 additional places shall be made available at Lingfield Epileptic Colony, Surrey, where the instruction given resembles that associated with the ordinary public elementary school. In addition, manual training and open-air occupation are provided. The children are housed in villas and special attention is devoted to their comfort and recreative pursuits, whilst it is possible to ensure the regularity of hours so essential to successful treatment. Continuous observation, which is, of course, desirable for all patients suffering from epilepsy in its varying manifestations, is maintained by the medical superintendent, and the children are sent home as soon as their condition may be deemed to be arrested. In cases where the epilepsy persists, residence at the school is permitted up to the age of 16 years. Children between the ages of 7 and 14, resident in the County of London, are eligible for admission, and all applications should be addressed to the Education Officer, The County Hall, S.E. 1. In view of the fact that, in the past, there has been a considerable waiting-list, speedy application is

advised. The more urgent cases will receive priority but, subject to this proviso, applications will be dealt with in the order in which they are received, and every effort will be made to secure admission as early as possible. It should be noted that the provision at this school is made for educable children only.

SUPPLY OF EGGS TO HOSPITALS.

DURING the next few months the marketing of eggs will undergo a number of changes that may well give rise to fundamental reforms. The "national mark scheme," beginning on Feb. 1st, is a voluntary one, but already nearly a hundred accredited packers have promised their adherence to it. Under this scheme eggs will be graded for retailing in three classes, according to size, and only new-laid eggs will be sold under the "national mark." The scheme is designed to help British producers to secure the market in this country, and its success, of course, depends on the extent to which the producers seize the opportunity, and the purchasers support them by demanding "national mark" eggs. On March 1st there will come into operation a clause of the Agricultural Produce (Grading and Marking) Act, 1928, requiring retailers to mark all home-produced eggs that have been preserved. Later on, probably in April, an Order in Council will come into force, insisting that imported eggs shall be marked with their country of origin, and another clause of the Act will require all home-produced eggs that have been cold-stored or gas-stored to be marked before they leave the store.

These changes affect the public health very closely. Eggs are extensively used in the home and play an important part in many invalid diets; they are easily prepared, readily assimilated, and contain more nutriment than most other natural foods. But it is important that they should be fresh. Mr. James Gatecliff, in an interesting booklet [1] on the subject, goes so far as to say that the stale egg is not merely useless but actually harmful, and proceeds to criticise the supply of eggs to hospitals on the ground that insufficient care is taken to get them fresh. Egg-purchasing has, of course, a peculiar difficulty for the hospital authority, who must obtain large supplies of reliable eggs at the lowest possible rate. At present many institutions put out tenders for their egg-supply, making as the chief, or only, condition that the eggs shall weigh at least 2 oz. Many egg-distributors deplore this proviso, because the average pullet at its first laying season produces an egg which is just under 2 oz. in weight, but otherwise entirely satisfactory. They say that the hospitals could save money, without any deterioration in the quality of the eggs they receive, if they changed the 2 oz. standard. Mr. Gatecliff, however, maintains that at the present time many hospitals save money at the expense of their patients, and declares roundly that "the present methods of obtaining eggs for charitable institutions is not only a disgrace but a national scandal." He records a visit to a large relief institution in London, where he found that the so-called "new-laid" eggs were at least three weeks old. He relates that a large London hospital sent out tenders for first-grade British new-laid eggs and turned down a tender of 1*s.* 10*d.* a dozen as too expensive at a time when a number of poultry-farmers—between them supplying some 100,000 eggs a week—informed him that their lowest cut-price for really fresh eggs was 2*s.* 3*d.* per dozen. Mr. Gatecliff suggests as a remedy that firms of established reputation should be instructed by the hospital authority to purchase eggs at statutory market prices, thus abandoning the present system of commercial tendering. It might be interesting for the conscientious hospital administrator to investigate his egg-supply for, say, a week, and see what proportion of the eggs sent up to the wards could genuinely be classed as new-laid and suitable for the invalid. A simple test to determine the age of an egg is to drop it gently into 5 or 6 in. of water in a flat-bottomed vessel, 1 oz. of common salt having been added for each pint of water. A new-laid egg will fall to the bottom and lie flat on its side. An egg between 12 and 21 days old will settle at an angle, the broad end rising. As age progresses the angle increases, until the egg stands upright on its base. Later still, it will float upright, while the "election egg" will float on its side on the surface. This test will not work with eggs preserved in lime or water-glass, but there are three useful guides to the preserved egg. First, the shell will crack from crown to base in boiling; this is specific. Secondly, the yolk is displaced, often touching the shell. Thirdly, the white is watery and has lost its firmness and elasticity.

If Mr. Gatecliff's accusation is justified it is a grave one; otherwise it calls for disproof. Dr. G. Clark Trotter, medical officer of health for Islington, who writes a preface to Mr. Gatecliff's booklet, initiated in our columns a correspondence [2] which revealed the difficulty experienced under the old regulations, both by the public in obtaining new-laid eggs and by the medical officer of health in ensuring that the eggs on sale in his area were properly described by the retailer. The new arrangements have long been desired by reputable egg-marketing firms, and they seem to meet the needs of our correspondents very adequately. Certainly no hospital ordering its eggs under the "national mark scheme" need fear Mr. Gatecliff's investigations, and it is surely not too much to ask that all hospital authorities should see that the food of their patients is at least as pure as their drugs.

[1] Eggs; A Treatise on their Food Value and a Helpful Guide to Securing the Genuine Article. Nov., 1928. W. Speaight and Sons, Ltd., 98, Fetter-lane, E.C.4.

PUBLIC HEALTH IN GUERNSEY.

THE Channel Islands have a deserved reputation for salubrious climate and other amenities. It is interesting to compare the conditions of public health with those of England and Wales and to note the problems which the local authorities have to face. The report for 1927 of the medical officer of health for Guernsey tells us that Guernsey has an area of about 25 square miles and a population just under 40,000. Its natural beauties are great, its soil very fertile, and the climate attractive, cooler in summer and warmer in winter than on the mainland. The average hours of sunshine over 34 years have been 1897. The water-supply from deep wells belongs to the Government and is "of exceptional purity." During 1927 Guernsey exported 24,509 tons of tomatoes, 3217 tons of flowers, 1165 tons of grapes, and 2304 tons of vegetables. Presumably the islanders have plenty of these requisites for themselves. Most of the fruit is grown under glass. An additional export was 195,591 tons of granite for road-making. The milk herds are free from tuberculosis. The health statistics are good in parts. Infant mortality is higher than in England and Wales and about double the New Zealand rate—75 for 1927. The neonatal rate, 46, was also high. The pre-school child rate was 24. On the other hand, the maternal rate from childbirth is about half that of England or New Zealand. During the last 27 years there have been 24,593 births and 53 maternal deaths from childbirth—a rate of 2·15 per 1000 births. During the last two years one-seventh of the total births took place in the Lady Ozanne Maternity Home. There is no health visitation or effort to educate the mothers. At the end of 1927 arrangements were made for "part-time" school nurses. The tuberculosis death-rate is somewhat high. Granite quarrying is acknowledged to be an occupation predisposing to phthisis, owing to the presence of free silica in the rock, but one would not expect raising flowers and fruit under glass to be an unhealthy

[2] THE LANCET, 1927, ii., 141, et seq.

occupation. There were eight deaths from non-pulmonary tuberculosis in 1927 and four in 1926. It would be interesting if it were possible to obtain post-mortem examination of these small numbers of deaths yearly, in order to ascertain if the absence of the bovine bacillus confirms the claim that the cattle are free from tubercle. The respiratory death-rate was satisfactory except for the death-rate of children under one year, which would no doubt be improved by the work of health visitors. For years mumps was absent, but was introduced by school-boys from England during 1927. No cases of ophthalmia neonatorum had been notified for many years, but two cases, both ending in blindness, occurred in 1927, possibly because there were no health visitors to give the needed warning. The States have built 117 houses since 1921 and 80 were under construction during 1927, but Dr. Bishop would like to see baths installed in all the new houses. At present very few houses have baths and there is an urgent need for public baths. Although the water-supply is constant, there is no power to compel its being laid on to existing houses, and this lack of proper water-supply in some of the poorer parts is a great hardship and danger. As Dr. Bishop puts it—cleanliness being next to godliness—if the islanders were as well provided with baths as they are with churches and chapels there would be no cause for complaint. The last instalment of States houses will enable the worst slum to be cleared, but Dr. Bishop shows that several of the slum tenants will not willingly leave their present surroundings.

PROFESSIONAL ETIQUETTE.

THE recently published rulings of the General Council of the Bar upon doubtful points of etiquette and conduct are of interest to other professions. Two points in connexion with advertisement are specially dealt with. A barrister inquires if there is any objection to his broadcasting a short course of popular lectures on general topics of law with the usual insertion of his name and short particulars in the *Radio Times*, and the description "barrister-at-law." He also asks—with a courage which will shock the older generation of barristers strictly trained in circuit discipline—whether his photograph may appear in the B.B.C.'s quarterly "Talks and Lectures." The General Council of the Bar answers that he may broadcast the lectures as given by a "barrister-at-law," but that his name, address, and photograph must not appear. Thus novel wireless developments have raised an old issue afresh; few barristers can have had any doubt as to how the Council would decide. The decision is in keeping with the long-established principle forbidding a member of the Bar to advertise himself by articles under his own name on legal topics in popular journals. Specialist articles in specialist publications like the *Law Quarterly Review* are, of course, on an entirely different footing. The second point of this nature dealt with by the Bar Council's Annual Statement for 1928 is the answering of legal questions by barristers in newspapers. Here the Council republishes a former "warning notice" which it has caused to be displayed also on the screens of the Libraries and Common Rooms of the Inns of Court during the past year. The notice observes that the Council's attention has been called to the increasing practice of legal journals advising or professing to advise their subscribers on points of law arising in actual practice. It mentions a recent instance where a firm of publishers has offered free advice on conveyancing matters to all subscribers to one of its publications. The Council has no means of knowing whether such advice is supplied by members of the Bar, but it believes that in some cases the advice is represented to the client as being "Counsel's opinion." It reaffirms its former rulings and declares unequivocally that it is contrary to professional etiquette for a barrister to answer legal questions in newspapers or periodicals, whether for a salary or at ordinary legal remuneration: (1) where his name is directly or indirectly disclosed or liable to be disclosed, or (2) where the questions answered have reference to concrete cases which have actually arisen or are likely to arise for practical decision. A barrister inquired if the Council would give any further guidance by defining more narrowly the reference to "a particular question likely to arise for practical decision." Not to be drawn into hypothetical cases, the Council replied that it was a matter for the discretion of the barrister himself. That final answer counts for much in these cases of doubt. If a professional man knows that certain forms of self-advertisement are illegitimate and contrary to the accepted traditions of his fellow-practitioners he can refrain from treading close to the border-line. Every profession has its members who sail close to the wind; their colleagues know them and form their own opinion. In this matter of advising on technical questions in journals the legal profession has probably had some increased demand or opportunity lately in view of the revolution in the law of conveyancing and real property which has sent back to school again many men of long experience and adequate instruction in the older law. The medical profession is here not quite in the same position as the legal. Advice upon health is a personal matter; the patient must be seen by the practitioner, whereas in many cases a barrister might be able to give an opinion—upon the interpretation of a clause, for instance, or upon the inference to be drawn from correspondence—without an interview. Moreover, questions of health are usually more urgent than questions of legal rights; a patient may be unwilling to wait a week for the printed reply. In other respects there is no great difference between the official standards of the Bar Council and the General Medical Council. In both professions there will be members, junior as well as senior, who are a law unto themselves. The standards cannot be upheld unless they are supported by the general approval of the rank and file. If they have that approval, they are entitled to the loyal obedience of all.

CHRONIC ULCERATIVE COLITIS.

DURING the last few years a good deal of interest has been shown in the subject of chronic diseases of the colon, and several important contributions to the medical literature have appeared lately. J. A. Ryle [1] has given a good summary of the clinical aspects and relationships of the visceral neurosis known as spastic constipation or spastic colon, with its allied condition muco-membranous colitis; diverticulosis of the colon has occupied the attention of meetings of many medical societies, and a full description of its clinical features, complications, and treatment appeared in this journal last year [2]; while chronic infections of the colon formed a subject of discussion at the meetings this year both of the British and American Medical Associations. The discussion at the former [3] covered the broad ground of the flora of the fæces and the relation of the bacteria found to diseases of the bowel and of the body generally. Part of the discussion turned on the possible causes of chronic ulcerative colitis and references were made to the claims of the enterococcus or fæcal diplostreptococcus as a causative agent in this complaint; these claims were regarded as non-proven. At the meeting of the American Medical Association,[4] however, strong support of these claims was brought forward by J. A. Bargen and others. In 189 cases of chronic ulcerative colitis observed at the Mayo Clinic, Bargen had isolated in pure culture a diplostreptococcus with definite morphological, cultural, and biological properties, which he has come to regard as the ætiological agent in the disease. The strains isolated were

[1] Ryle, J. A.: THE LANCET, 1928, ii., 115.
[2] Spriggs, E. I., and Marxer, O. A.: THE LANCET, 1927, i., 1067.
[3] Brit. Med. Jour., 1928, ii., 555: THE LANCET, 1928, ii., 295.
[4] Jour. Amer. Med. Assoc., 1928, xci., 1176.

injected intravenously into 459 healthy rabbits, and in 268 rabbits reactions were observed varying from marked diarrhœa to extensive hæmorrhages and severe ulceration of the colon. Following up these observations, Bargen has attempted the specific treatment of cases of ulcerative colitis by vaccines, and more recently serum, prepared with the diplostreptococcus as antigen. He is able to report since 1924 a series of 250 cases of chronic ulcerative colitis, in which 70 per cent. were entirely free from bowel symptoms from 16 to 52 months after the beginning of treatment. This good result over a large number of cases is suggestive, and if confirmed by other workers will be a distinct advance in the treatment of the disease; but, in the discussion following Bargen's paper, the bacteriologists were not in agreement with his findings that the diplostreptococcus is so frequently associated with the disease, or the clinicians that specific vaccines and sera were so helpful. The cultures were made by smears from the surface of rectal ulcers when observed with the proctoscope, and the organism may be, therefore, only a predominant secondary infection. The diplostreptococcus, too, is found in a considerable number of healthy people, but these strains, though morphologically similar, appear to have only slight pathogenicity for animals. On culture media the organism grows either in a "smooth" colony composed mainly of diplococcal elements or short chains, or in long chains which curl up upon themselves and present a "rough" appearance. In other bacteria the "rough" and "smooth" forms show wide variations in their antigenic properties. It is possible that differences in such characters may account for discrepancies in the views of Bargen and others, and that the difficulty may be resolved by further study.

Bargen reports that at the Mayo Clinic in 1927 there were three times as many cases of chronic ulcerative colitis as in the years before 1923. Many of these must be early cases and more amenable to treatment, and it may be surmised, too, that increasing experience has developed an improvement in the non-specific therapy which is carried on side by side with vaccine and serum treatment. Careful attention to diet and building up of the strength of the patient is necessary, and bowel lavage most helpful. Surgical measures, such as appendicostomy and cæcostomy, appear to be of doubtful value. Max Einhorn has advocated treatment by flushing of the colon with the intestinal tube by the oral route, and reports three cases successfully treated.[5] A narrow tube 2½ to 3 metres in length was swallowed and fixed when the end was observed by radiographic screening to be in the cæcum. By its means 60 c.cm. of 0·5 per cent. mercurochrome or 100 c.cm. of 1 per cent. yatren solutions were instilled into the colon daily, or daily instillations of a quart of 0·05 per cent. calcium carbonate were made through the tube which was left in position and anchored by string and safety-pin to the shirt of the patient. The tube might remain in place for three weeks while daily treatment was going on before being withdrawn by the mouth.

A. F. Hurst[6] has used with excellent results over some years a polyvalent antidysenteric serum. Absence of positive findings of dysentery bacilli in these cases had led to the belief that the treatment was non-specific; but recently P. H. T. Thorlakson[7] has reported the isolation of dysentery bacilli in four out of five cases (three of Flexner group and one of Shiga type) where scrapings of the ulcer wall were taken with a sharp cutting curette. Improvement followed the use of serum prepared from the bacilli isolated.

The just estimation of the results of any method of treatment is liable to be fallacious owing to the slow evolution and relapsing character of the disease; but now that the attention of the profession is being drawn to these cases, their early recognition should improve the prognosis. The successful management of this complaint calls for all the skill and resources and patience of the physician, and for whole-hearted coöperation and faith on the part of the patient.

[5] Med. Jour. and Record, 1928, cxxviii., 377.
[6] THE LANCET, 1928, i., 931.
[7] Canad. Med. Assoc. Jour., 1928, xix., 656.

INFLUENZA IN GREAT BRITAIN.

AN anxious watch is being kept upon the incidence of influenza in this country, since it is only too likely that the American epidemic will find its way across the Atlantic. As the disease is not notifiable it is by no means easy to decide whether this calamity is already upon us. Those who have studied the weekly reports of infectious disease in England and Wales (see page 156) will have noticed that the death-rate from influenza is slightly rising, but so far the maximal number of deaths from this cause during a single week has not reached 100. This might suggest that Great Britain is as yet free from the American infection, but unfortunately it must be noted that a considerable number of deaths have been notified from Glasgow, where a sharp outbreak began about a fortnight ago. The *Manchester Guardian*, which has collected information about the incidence of influenza in the North, reports that all the available accommodation in the municipal hospital at Glasgow was taken up last week-end and that pneumonia is becoming a frequent sequel of attacks. Some idea of the proportions of the epidemic may be gained from the fact that the fares taken on the tramways last Sunday were 30 per cent. below normal, whilst the number of deaths in the city during the week ended Jan. 12th was 645, compared with 388 in the week before. Those attributed to influenza number 49, whilst bronchitis and pneumonia accounted for 73 and 118 respectively. The total figure for the week corresponds to a death-rate of 31·2 per 1000 per annum. The information collected by the same newspaper from Wigan, Bury, Derby, Northwich, Oldham, Stalybridge, Heywood, Burnley, Buxton, Preston, and Stockport reveals no abnormal outbreak of influenza at any of these centres. Dr. C. O. Stallybrass, assistant medical officer of health for Liverpool, is quoted as saying that there is no evidence of any epidemic in that city at present, but that there may be a good deal more of it than is suggested by the notification of four or five deaths a week. "Influenza," he adds, "is said to travel at about the same rate as the mail. An outbreak of influenza is about due and the weather conditions are favourable to it, but there are no indications that it has arrived yet." Attention is drawn by Dr. A. R. Erskine, medical officer of health for Abram, to the danger of this disease breaking out in industrial areas such as the coalfields, where a widespread epidemic may make it necessary to engage extra nurses and instal food kitchens. The risk of removing pneumonia patients from their homes cannot be forgotten, and in villages where there is much unemployment and little money, with perhaps a scarcity of food besides, a situation may well arise which will severely tax the powers of the public health services and of charitable organisation.

Dr. Fernand Widal, professor of internal pathology in the University of Paris and physician to the Cochin Hospital, has died at the age of 67. The agglutination reaction bearing his name is only one of many contributions which medical science owes partly or completely to his labours, and in the domain of clinical medicine he was equally eminent.

RECOVERY OF EXPENSES BY A HOSPITAL.—A case was heard at Colwyn Bay county court on Jan. 10th in which the governors of Colwyn Bay and West Denbighshire Hospital sued a former patient for 4 guineas in respect of maintenance. It was stated that this patient, who had been injured in a motor accident and had been treated in private at the hospital, had failed in a claim for compensation. He did not appear and was not represented. The registrar ordered that he should pay £1 a month.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXXVIII.—THE TREATMENT OF THE BROKEN NOSE.

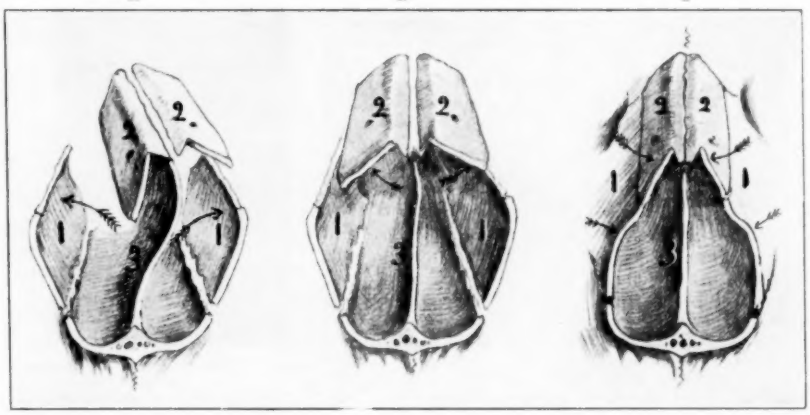
THE nose, being the most prominent feature of the face, is a very frequent site of injury. Its fracture is far commoner than the profession realises and, though it is rightly classified as a minor fracture, appropriate and prompt treatment becomes a matter of import when æsthetic and functional values are taken into consideration. Probably only a very small proportion of broken noses receives the best treatment and a more definite policy than that usually adopted is, in our experience, likely to be successful. A large percentage of traumatic septum deformities would never have to be submitted to difficult submucous resection if the broken nose were "set" adequately at once or within two or three weeks of the injury; various minor disabilities arising from bony displacement would not occur; while the resultant deformity—varying, objectively, from a slight bump or misalignment to a serious disfigurement and, subjectively, from a trivial annoyance to an overbearing inferiority complex—would be definitely avoided.

Diagnosis.

The diagnosis of the condition is not always an easy matter. By the time the nose is seen by a doctor there is usually so much swelling that the displacement is not obvious, and so much tenderness that it cannot be discerned by palpation. X ray examination is not always available or, when available, applicable with success. An antero-posterior view is useless except to give evidence of the extension or not of the fracture into the septum; in lateral views one side of the bony vault is superimposed on, and occludes the other. Although stereoscopic radiograms often confirm the suspicion of fracture, there are, as yet, no definite positions in use which give a clear conception of the complicated nature of the fracture. A small film placed on the side of the nose and exposed to a softened tube will nearly always suffice, however, to determine the presence or absence of fracture; such X ray evidence should be more easily obtainable, not so much from the point of view of guidance in treatment as for the purpose of safeguarding the profession and of encouraging the patient to submit to early corrective manipulation. Fig. 4 shows that good and instructive views can be taken.

In the absence of X ray evidence and in the presence of swelling, it is perhaps wise for the practitioner to allow the latter to subside sufficiently to convince himself and the patient of the amount of displacement and deformity present.

FIG. 2.—*Stages of Operative Treatment.*

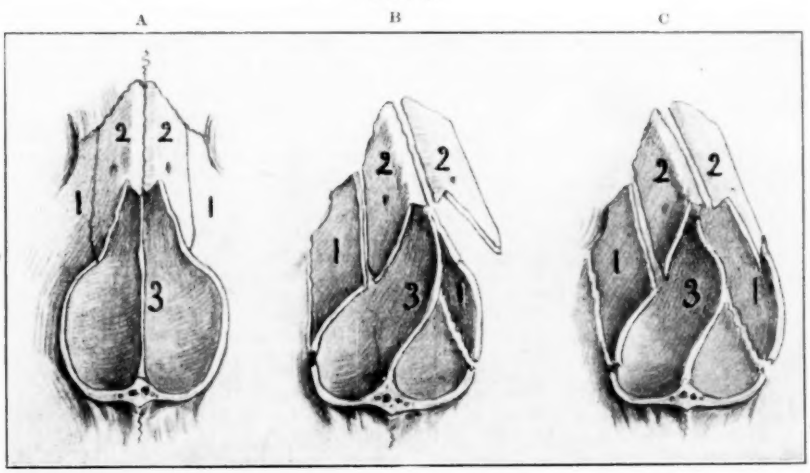


A = Frontal processes levered outwards.

B = Septum straightened and nasal bones pushed forwards.

C = Components moulded into correct position by digital manipulation.

FIG. 1.



A = Normal components of nasal arch.

B = Fracture with displacement to the left.

C = Fracture with displacement to the left and impaction on the left side.

1. Frontal process of maxilla. 2. Nasal bone. 3. Septum nasi.

Varieties of Fracture.

The type of displacement of the bony and cartilaginous components of the nose depends on the direction and severity of the blow and also on the shape and size of the striking surface. The smaller and sharper the striking surface, the more is the injury localised to the line of impact. Conversely, contact with a broad surface produces displacement and tends to cause impaction of the fragments.

There are three directions of the blow which may be usefully defined: (1) from the side and directed at right angles to the side of the bony arch; (2) from in front and received

directly on the prominence of the bridge; and (3) from below directed chiefly against the lower border of the septum. Combinations of these are common, the most usual being one from the front and side. When the blow causing this type of fracture is severe, the man in the street knows that the side of the nose receiving the blow is pushed in, the opposite side is pushed out, and the front of the nose is pushed back. More precisely, the *frontal processes of the maxilla* are fractured at their bases and at their junctions with the nasal and frontal bones, one being displaced inwards and the other outwards, both rotating on their fractured bases. The *nasal bones* are fractured from their several osseous unions and are carried as a whole in a direction continuing the line of the blow, rotating so as to produce, with the displaced frontal processes, the typical hollow on one side and convexity on the other. The *septum*, also, is fractured and displaced. It is bent in its upper part, following the bony framework and considerably narrowing the airway above, while in its lower part it is often dislocated from the nasal crest of the maxillæ. Actual fracture with comminution and even impaction or overlapping may occur, the latter most frequently as the result of a blow direct from the front.

The First Three Weeks.

Preliminary cocainisation is to be recommended and general anæsthesia is advisable, ideally administered by the double-tube endotracheal method of Magill. Where the latter is not available, adequate steps should be taken to prevent inhalation of blood. The skin of the face is cleaned with spirit and the nostrils are cleared of all blood and mucus collections, and painted over with spirit or other antiseptic.

The aim of the operators should be: (1) to displace both frontal processes, (2) to disimpact both nasal bones and bring them forwards, (3) to straighten the septum, and finally, (4) to push in the frontal processes and mould the whole arch with the fingers.

Walsham's forceps, right and left, are used for manipulating the nasal bones and frontal processes. It is well to cover the outer, larger blade of these forceps with rubber tubing to prevent damage to the skin. One or both of two quite distinct actions may be employed in using the forceps. Taking the left frontal process in the fracture depicted in Fig. 1 B and C in one method, the blades having been applied, the instrument is rotated by the act of supination of the wrist of the operator; in the other, the wrist remains pronated and the bent elbow is raised from the operator's side, the grip of the blades on the bone being held firm throughout.

A direct, accurately aimed blow with a mastoid mallet over the upper ends of the nasal bones, the skin being protected by gauze and the eye carefully guarded, is frequently necessary to achieve finality in mobilisation. Such a blow requires considerable nerve and steadiness on the part of the operator.

Walsham's septum forceps are employed for straightening the septum, the blades being passed one on each side; successive grasps and twists, varying according to the type of displacement, are made until the whole septum is satisfactorily reset in a central position. Finally, the septum forceps are inclined forwards so as to elevate the liberated nasal bones, while the fingers push in the mobilised frontal processes behind them (Fig. 2 B and C).

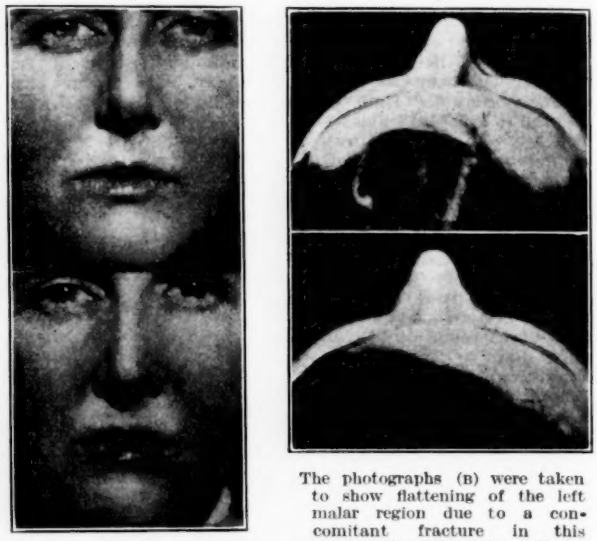
The operator should not be satisfied until he can push the nose into an overcorrected position and until it will stay in that position without support. Any result short of this indicates that disimpaction and mobilisation have not been fully carried out.

After treatment consists in applying cold compresses at first and later, in instructing the patient how to massage and manipulate the nose. The latter is of definite value during the second week, especially when there is any tendency to slight deviation whilst consolidation is taking place. Firm pressure with the thumbs on the frontal processes should be employed by the patient as soon as possible after the operation. After maintaining this pressure for a short time, the thumbs are allowed to slip forwards and upwards. It is as well to advise that this should be done in front of a mirror.

Complications.

The only complication of note which has been recorded as occurring before or after operation, is the formation of a hæmatoma of the septum. We

FIG. 5.



Nasal fracture with deviation to right. Result of corrective operation 17 days after injury.

The photographs (B) were taken to show flattening of the left malar region due to a concomitant fracture in this region; they illustrate well the deviation of the bridge line and the result of operative correction.

FIG. 3.

Nasal fracture with deviation to left. Result of corrective operation 23 days after injury.

FIG. 4.

Radiograms showing several lines of fracture in nasal bone. (A, by Dr. Graham Hodgson; B, by Dr. Bertram Shires.)

have not ourselves met with this complication as a sequel to operation; should it occur it must be relieved immediately it is discovered. Some rare cases of sepsis tracking upwards through the cribriform plate are reported in the literature.

Other Varieties of Fracture.

Other varieties of fracture are treated on similar lines. Where minor displacements of the nasal bones only have occurred, it is not necessary to mobilise the frontal processes or to interfere with the septum. When the nasal bones have been much comminuted by a localised heavy blow and the neighbouring part of the septum has been damaged, caution should be used in prognosis as to restoration of good contour.

Fractures with Mal-union.

After the third or fourth week consolidation has taken place and the simple operative procedure outlined above will not be sufficient to correct deformity. In all old, established fractures incisions must be made in the lateral vestibular walls, the periosteum and skin raised from the bones, and adequate saw and chisel cuts made before mobilisation can be attempted. In such cases, if the septum be involved, it may "crack" back into correct position when the overlying roof has been raised and the septal forceps have been applied. Many a septum that appears to demand a submucous resection can be reset in this way. If there has been much impaction, a competent septum operator should be asked to coöperate in this part of the operation.

H. D. GILLIES, C.B.E., F.R.C.S.
T. POMFRET KILNER, F.R.C.S.

Special Articles.

"DIPHTHERIA" IN SCHICK-NEGATIVE REACTORS.

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IT is generally agreed that a person reacting negatively to the Schick test has a high degree of protection against diphtheria. This view is in entire consonance with a large body of immunological facts and principles, and is confirmed by: (1) the practical absence of the disease in specially exposed groups of Schick-negative persons, such as fever nurses (Benson, 1928; Harries, 1926; and Kinloch, 1927); (2) the general incidence of diphtheria in Schick-tested populations; (3) the small, but critical, experiment of Guthrie, Marshall, and Moss (1921), who deliberately inoculated Schick-positive and Schick-negative persons with virulent diphtheria bacilli and were able to produce diphtheria in the Schick-positive persons only*; (4) the general experience that Schick-negative people may "carry" virulent Klebs-Löffler bacilli in their throats for long periods without any symptoms of local or general infection.

It must, however, be realised that the degree of "immunity" in human beings conferred by any practicable method is relative. It implies the presence of a defensive mechanism which must be considered in strict quantitative relationship to the magnitude of the attack. A Schick-negative person is provided with sufficient diphtheria antitoxin to deal with any ordinary infection, but one can conceive that it might not be sufficient if the amount of toxin produced by the invading micro-organism is appreciably greater than the normal. The second point to be remembered is that active immunity is a function that may be subject to fluctuation, and any method of estimating it (such as, for example, the Schick test) is only fully valid at the time of the test. One has to determine by experience how permanent is the state of immunity registered by a negative Schick test.

A small percentage of Schick-negative persons relapse into the Schick positive condition, and there is obviously no a priori reason why these should not be susceptible to diphtheria. Park (1926) found 90 per cent. still immune after nine years. Parish and Okell (1928) found that of 533 children who were Schick negative on the original test made one to seven years previously, 98·9 per cent. were still clearly negative, and 1·1 per cent. showed a reaction which was read as positive. A second group of 440 children who were Schick positive on the original test were rendered Schick negative by immunisation. When retested one to seven years later 5 per cent. were found to be positive. The positives in both groups numbered 28, or 2·9 per cent. of the entire series. The further observation was made that 24 of the 28 who had relapsed to the positive state were in a state of active immunity and reacted rapidly to the minute dose of toxin used in the Schick test by producing circulating antitoxin; they became Schick negative without further prophylactic treatment. These could be regarded as able to resist an attack from the diphtheria bacillus much more efficiently than they would if they had been in a state of what might be termed virginal non-immunity. Only 4 of the 28 children (0·4 per cent. of the entire series) required immunising injections of toxoid-antitoxin. Three of the four showed a marked rise of antitoxin within one to three weeks of the injection of a single 1·0 c.cm. dose, but the fourth child failed to become Schick negative within seven weeks, and her blood contained no detectable antitoxin—i.e., less than 1/2000th unit. She was therefore in a state of non-immunity indistinguishable, during the short period of observation, from the virginal state. In the case of this child one has no reason to postulate non-susceptibility to the disease.

The question arises—do attacks of diphtheria occur in Schick-negative persons corresponding with these different degrees of immunity, and if so, how commonly do they occur and how severe are they?

The purpose of the present paper is to discuss experiences on these points that have accumulated during the last six years among a Schick-tested population which, though it cannot be exactly enumerated, may be conservatively estimated as over 20,000 Schick-negative persons. During this time a considerable number of Schick-negative persons were met with who came under suspicion as suffering from diphtheria, but in the great majority of these the diagnosis of diphtheria was not confined by clinician or bacteriologist on further examination. It is well known that the diagnosis of diphtheria, as made under the ordinary conditions of medical practice, is beset with difficulties, and the criteria which may prove useful for ordinary clinical purposes are often inadequate to establish an unquestionable diagnosis. It is necessary, therefore, to decide what criteria should be satisfied before accepting as valid both the record of the Schick test and the diagnosis.

The possible fallacies connected with the Schick test are sufficiently well known and need not be discussed in detail. The material used for the test may have been inactive owing to faulty preparation, improper conditions of keeping, bacterial contamination, or contact with antitoxin—e.g., in an insufficiently washed syringe. If these fallacies are properly guarded against by manufacturer and operator they are negligible. One can almost always conclude that

* Some years ago we had the opportunity of watching an inadvertent experiment bearing on the same point. Toxin amounting to some 10 to 20 human lethal doses was injected intradermally into a known Schick-negative reactor No specific symptoms, local or general, occurred.

in a given Schick test the material was active, owing to the record of well-marked Schick-positive reactions on subjects tested at the same time. It is possible, too, that errors may be made, by injecting at a slightly deeper level than usual, but this does not seem to affect the test seriously.

If the full 0·2 c.cm. of the Schick dose is not injected an error in the Schick reading may occur, but, in our experience, as long as the greater part of the 0·2 c.cm. dose is injected the readings obtained are sufficient for practical purposes. Errors may, of course, be made in the reading, particularly where a "pseudo" element is present, but these, again, are almost non-existent when the tests are done by an expert operator and reader. Doubt may indeed sometimes arise during reading, but the true state of immunity of the patient can almost always be determined before definitely recording him as Schick negative.

If the injections are done with reasonable care, if readings are made at the end of seven days and again at 14 days (to avoid the real risk of clerical error in recording), and if strongly positive individuals are met with when the same material is used, there is little cause for doubt as to correctness of the Schick reading. If, however, a case of alleged diphtheria should be reported in a Schick-negative person, it is necessary to inquire into all these points. It is also important to take a 5 c.cm. sample of blood at the onset of the disease and before horse antitoxin serum is given. A knowledge of the state of immunity of the patient at the time of attack can be obtained by titrating the antitoxin in the blood, or the patient may be Schick tested. (The administration of antitoxin intramuscularly three to four hours after a Schick test does not prevent the Schick toxin from producing its proper reaction.)

The question of diagnosis is a difficult one owing to the mild and often atypical character of the disease when met with in Schick-negative persons. Before we accept the diagnosis in these cases: (1) there must be sore-throat with exudate, continuous or follicular; (2) virulent diphtheria bacilli must be present in throat or nose in predominating numbers; (3) alternative causes for the condition, such as hæmolytic streptococci and Vincent's organisms, must be excluded. The virulence of the bacilli associated with alleged cases of diphtheria in Schick-negative persons must be ascertained.

The records of any isolation hospital will show that patients admitted with a diagnosis of "diphtheria" on clinical grounds are by no means invariably found to be suffering from that disease. We have, thanks to Dr. Foord Caiger and his staff, had a valuable experience of the difficulties in diagnosis. In this investigation (Caiger and O'Brien, 1924) the clinical staff of a large fever hospital arranged to coöperate at every step in a joint investigation with the laboratory workers. Approximately 436 patients certified as suffering from diphtheria and admitted to the South-Western Hospital were included in the examination. In 41 per cent. the diagnosis could not be confirmed at any period during the patient's stay in the fever hospital. In 22 per cent. of cases the diagnosis made in the admission room had to be revised in the wards.

We have, however, met with or have records of a small number of cases of diphtheria in "Schick-negative" persons, 18 in all, in which there was no serious reason either to doubt the record of the Schick reading or to question the diagnosis. The data were not equally complete in all these cases, but in a few of them we are able to make a reasonable attempt at an immunological classification.

The first type of case apparently illustrates the occurrence of a mild diphtheria in persons, once Schick negative, who had relapsed into the Schick-positive state (or whose circulating antitoxin was shown to have been low by blood titration) by the time of the onset of the disease.

CASE 16.—A nurse, three months in ward with unusual number of severe cases of diphtheria; previously immunised, passed as Schick negative 19 months earlier. Titration of blood at onset of attack, 1/500th unit of antitoxin per c.cm. (therefore now Schick positive). Discrete "membrane" on both tonsils. Sore-throat. Virulent K.L.B. isolated. Temperature normal throughout. The whole attack was considered trivial and the patient recovered rapidly without antitoxin being given.

CASE 11.—A nurse in another fever hospital; previously recorded as Schick negative after immunisation. Titration of blood at onset of attack showed 1/100th unit per c.cm. Small patch of "adherent whitish exudate." Virulent K.L.B. isolated. Attack very mild, temperature normal throughout; pulse throughout below 90, patient recovered rapidly without administration of antitoxin.

The mildness of these two cases and their tendency to recovery without treatment indicate that, though their circulating antitoxin had fallen to a low level, their active immunity allowed them to produce antitoxin rapidly, and by their own effort to cut short the disease. These two nurses evidently belonged to the group of Schick-positive but actively immune persons studied by Parish and Okell (1928).

The second type includes those in which the patient was found to be Schick negative within 48 hours of the onset of the disease (or whose circulating antitoxin was shown to be relatively high by titration).

CASE 3.—Boy aged 13 years. Tested twice and known by us to be Schick negative. Reported at night with sore-throat and moderate amount of membrane on both tonsils. Patient bright, no malaise or fever. Through a misunderstanding—fortunately for the completeness of our investigation—no antitoxin was given. Next morning membrane practically gone, thin veil of mucus present on small part of tonsils, temperature 98·6° F., child alert and active. Remained well and released after few days' observation. No sequelæ. Virulent K.L.B. in swab. Blood on second day of attack contained 1/20th unit of diphtheria antitoxin per c.cm.; a week later three units per c.cm.

The immunological story seemed fairly clear. The diphtheria bacilli had multiplied in the throat, produced a slight amount of membrane, and made toxin. Any toxin entering the body cells had been immediately neutralised by the circulating antitoxin, but had stimulated the antitoxin-producing cells to make antitoxin rapidly. The child, therefore, apart from slight soreness of the throat, remained quite well.

CASE 15.—In this case we were able to secure the full data—i.e., clinical report, virulent K.L.B. in the throat, and antitoxin in the blood. "Schick test on entry negative. Four months later, on a Saturday, complained of sore-throat. Seen on Sunday. Oblong strip of read ly removable diphtheria membrane upon left tonsil. Greyish-white. Temperature normal. No malaise. Slight reddening of tissue adjacent to patch of membrane. Direct smear showed morphological K.L.B. Schick test repeated. Negative. The girl, of course, had not been given antitoxin. She is physically fit. The local condition cleared quite rapidly—that is to say, within 48 hours—of its own accord." We found virulent diphtheria bacilli in a swab from this patient, and the blood contained 1/10th of a unit of antitoxin in agreement with the Schick-negative test.

CASE 18.—A child, who had been immunised and passed as Schick negative by a careful observer eight months previously, developed a very mild but definite attack of faucial diphtheria. A Schick test was repeated 24 hours after the onset of the disease and was negative. A blood sample for titration was not obtained. An almost pure culture of virulent diphtheria bacilli was obtained from the fauces. The child was not ill except for a slight soreness of the throat. The "membrane" rapidly cleared up without administration of antitoxin, and the patient recovered after a trivial indisposition.

In this class of case one would have thought that sufficient circulating antitoxin was present to prevent the development of even transient "sore-throat." One may explain the development of disease as due to a temporary failure of the patient's active immunity when confronted with an overwhelming infection. All the cases were mild and, in most, antitoxin was not considered necessary. The patient's defences apparently rapidly and successfully recovered themselves, probably by immediately producing circulating antitoxin. An alternative explanation is that the toxin of certain strains of the diphtheria bacillus is

not entirely neutralised by the usual antitoxin prepared against the Park 8 strain. There is, however, no sound evidence available in favour of the duality of diphtheria toxin, and such observations as those of Okell and Parish (1926), where the toxicity of 819 consecutive virulent strains was proved to be neutralisable with Park 8 antitoxin, are strongly opposed to this explanation.

In the remaining nine cases insufficient data were available for complete investigation, and we are not able to include them in either of the foregoing categories. In one of them a severe attack occurred; the patient recovered without sequelæ after antitoxin treatment. It is possible that this patient corresponds with the very rare class of individuals referred to above who, though once Schick negative, had relapsed to a state of non-immunity indistinguishable from the virginal state, and therefore could not be expected to react to the infection by producing circulating antitoxin sufficiently quickly to cut short the attack.

Discussion.

The outstanding features of these cases of "diphtheria" in Schick-negative persons are: (1) their rareness, (2) their mildness in the great majority of cases. The patients appear to have the power of dealing with the infection by means of their own antitoxic defences. In the majority of instances a diagnosis has not been easy. In some cases the "sore-throat" may have been caused by streptococci, Vincent's organisms, &c., and the diphtheria bacilli present in the throat of the carrier may have grown in the temporarily unhealthy tissues. In the cases under consideration we came to the conclusion that the membrane was in all probability primarily caused by the diphtheria bacilli present. To a similar type of case Thorne has given the term "local diphtheria" (1896, p. 703). This might be taken to indicate the presence of a slight amount of membrane in the throat caused by the diphtheria bacillus, with practically no disturbance of general health and no sequelæ. Used in the clinical sense this definition would apparently fit many of the cases discussed. From the point of view of pathology there may be some objection to this term. We may conceive that the bacilli may gain a lodgment in the throat, purely extracorporeally, and that any specific diphtheria toxin made, if it is absorbed locally, is so overwhelmed by the large quantity of antitoxin present in all the body fluids and cells, that it produces no specific stimulus to the immunity mechanism of the body and, therefore, no measurable alteration of antitoxin concentration in the blood (cf., the intradermic injection of toxin in a highly immune person). But probably the usual course is, as in Case 3; here, though no malaise occurred, the antitoxin concentration in the blood rose sharply. Since the toxin had clearly penetrated the body cells, the whole process cannot be spoken of as purely local. Though no antitoxin be given, the patient recovers normal health in two or three days and suffers from no sequelæ. This sequence we might agree to call "mild diphtheria," and the phrase is used throughout this paper in this sense. It is of interest that W. H. Park (1926) "has never seen an undoubted clinical case of diphtheria occur in a child who had recently had a negative Schick reaction after a test performed by an expert."

Whatever be the true nature of these cases, which we have taken to be diphtheria in persons once known to have been Schick negative, they cannot be considered to detract from the value of the Schick test. They appear as the exception which one must expect to meet in nearly every biological rule. Their very rarity proves that the accuracy of the Schick test is of a very high order and that, when properly performed, its fallacies are unimportant. The Schick test may still be held to stand alone in dependability among the tests for susceptibility to disease in human beings.

With regard to the problem faced by the clinician when he sees a patient said to be Schick negative, yet with signs and symptoms justifying an unhesitating diagnosis of diphtheria, the first duty is to the patient and antitoxin should certainly be given.

Conclusions.

Patients properly tested and read as Schick negative have a high immunity and contract diphtheria only in very rare instances. Only 18 cases in which the evidence could be considered convincing were met with in six years among a Schick-negative group probably exceeding 20,000. In every case but one the disease was mild and diphtherial toxæmia in the clinical sense was absent. The mildness of the disease is ascribed to the capacity of those who have been once Schick negative to respond rapidly by the production of circulating antitoxin. In a sense, therefore, diphtheria in those who have been once Schick negative is in the great majority of cases "modified diphtheria."

Wherever diphtheria is suspected in a patient considered to be Schick negative, the virulence of the diphtheria bacilli present and the antitoxin content of the patient's blood should be investigated.

Since this note was written, an interesting paper by A. V. Neale (THE LANCET, Dec. 29th, 1928, p. 1342) has appeared; some of the data lend added emphasis to several of our points.

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MEDICAL USES OF RADIUM.[1]

SUMMARY OF REPORTS FROM RESEARCH CENTRES FOR 1927.

THIS publication is one of a series of special reports in which are recorded the results of research work done with the stock of radium salt distributed on loan to various institutions by the Medical Research Council and the British Empire Cancer Campaign. The summary here printed is based upon the accounts of work done in 1927 submitted by the several participating institutions.

The general scope of the present report does not differ very much from that of previous ones,[2] but there are unmistakable signs that radium is being more widely and confidently used in the various forms of malignant disease. A definite technique has been developed for the treatment of cancer in almost all regions of the body except the stomach.

Dosage.—In connexion with dosage the most striking thing which emerges from a retrospect of the reports is that the intensities of the radium foci have in very many cases gradually been reduced with a corresponding prolongation of the time of exposure.

For many years it was the practice to look upon tubes of radium containing as much as 20 or 30 mg. of element as the most generally useful, and the times of exposure were round about 24 hours. Now, while this may still hold for some sites, notably in cancer of the cervix uteri, it has been shown that growths affecting the buccal cavity are better treated by much less intense foci, such as tubes containing 1 or 2 mg. inserted for a week or more. At St. Bartholomew's Hospital a technique consisting of the use of weak sources with times of exposure of 10 or 11 days, has been evolved for the radium treatment of operable cases of cancer of the breast.

[1] Medical Research Council, Special Report Series No. 126. London: H.M. Stationery Office. 1928. Pp. 22. 1s.

[2] Special Report Series Nos. 90, 102, 112, and 116.

When this scheme of research was initiated by the Council in 1921, there was no technique for a single variety of cancer that was so surely established that it could be followed to the exclusion of others. Now this is no longer true. For instance, any woman suffering from early carcinoma of the cervix uteri can have the disease locally removed by means of a definitely planned course of radium treatment as surely as by surgical means; a man with a malignant growth of the tongue can likewise have the disease locally cured. In the latter case, even if the growth should have extended to the glands, radio-surgical methods would offer a good prospect of eradicating the disease. These statements, which are put forward in the report with evident conviction, spell progress. The radium therapy of cancer seems to be at that stage when the definite gains of the present will act as a stimulus to efforts in the future.

Cancer of the Breast.

The Middlesex Hospital records (1) surgical radium therapy, and (2) surface radium therapy.

(1) *Surgical Radium Therapy.*—The radium methods most frequently used in mammary cancer are supplementary to radical operation. At the time of the operation, radium in separate tubes containing 10–20 mg. of element are inserted in the intercostal spaces, supraclavicular fossa, and apex of axilla; they are left in position for 24 hours. Should visible recurrences occur, they are treated by a method which aims at encircling the growth with radium tubes. The report from this hospital contains an account of the treatment of nine cases of recurrence after operation, and in the majority of these cases the local growth disappeared. In one case where the immediate result was favourable recurrence took place in five months and "cancer en cuirasse" developed over the region of the recurrences.

(2) *Surface Radium Therapy.*—During the period under review 63 cases of breast cancer were treated including 6 of primary breast cancer, 21 of supraclavicular recurrence, and 34 of nodular recurrence. This surface radium therapy was practically all carried out by means of gamma ray applicators,[3] having a concentration of 7·5–10 mg. of radium element per sq. cm.

Such an applicator applied close to the skin often produces a slight erythema if the exposure lasts three to four hours, but if maintained at a distance of 6 cm. the time of exposure for the same effect would be about 24 hours. When the skin is intact, the aim has been to give the maximum radiation possible to the underlying primary tumour or recurrence, with the minimum skin damage. Skin damage and consequent infection has been followed by renewed growth in apparently satisfactory cases. This has been shown again lately in one of the first primary breast cases treated; after an interval of more than three years fissuring took place in a damaged area of skin and renewed growth followed.

The full exploration of surface therapy methods has been prevented by insufficient supplies of radium and by the lack of beds for the treatment of those out-patients for whom prolonged distance applications might be the best method of treatment.

At St. Bartholomew's Hospital the technique employed in treating primary carcinoma of the breast has been described in THE LANCET (1928, ii., 111). Since 1925 27 patients have been treated, all having been proved by histological examination to have carcinoma: 4 showed local improvement, but died of metastases; 12 were apparently cured; 1 was apparently cured, but died of intercurrent disease; and 10 were improving at the end of the year.

Cancer of the Uterus.

(1) *Cervix Uteri.*—Each year the statistical data contained in the reports from the different centres become more valuable, and it seems to us unfortunate that they are not recorded in exactly the same way at each of the individual hospitals. The classification of cases in three subdivisions—namely, operable, borderline, and inoperable—is followed by several of the centres, while others only adopt the first and last specification. It has nevertheless been possible to effect a grouping which provides a means of evaluating in a general way the treatment which has been given.

Statistical data have been obtained from seven centres—of which St. Bartholomew's, University College, and the Middlesex Hospitals have included a certain number of operable cases among those treated, while Cardiff, Birmingham, Aberdeen, and the Medical Women's Federation have limited themselves to inoperable cases. A table shows that, whereas a considerable proportion of inoperable cases remain alive one or two years after radium treatment, this proportion is much smaller when the interval is three or four years. The inference to be drawn from this significant fact is either that the technique has so far improved that the results are really better than with that adopted three or four years ago, or that, in a big proportion of inoperable cases of cancer of the cervix uteri treated on the lines specified, recurrences will occur inevitably within three or four years. If the former alternative is correct, it will be proved within the next two years, when the data will be available. If the latter is true, then it is perhaps well to emphasise the fact that with some of the methods which are now being extensively used there is a strong probability of the recurrence of the disease within three or four years. In some, but apparently few, centres the local treatment with radium is supplemented by means of X rays. It is rather remarkable that this is not more often done, for the statistics of some continental centres show that better end-results have been obtained when the local radium treatment is supplemented by X rays or externally applied gamma rays. The Committee hope that some of the centres will help to decide the value of supplementary treatment.

As to technique, three main lines of technique are being followed at the centres, and during the period under review there have been very few changes. University College Hospital and St. Bartholomew's Hospital record variations, while at the General Hospital, Birmingham, in seven cases radium was supplemented by lead therapy, the preparation being "choriotrope."

Interesting clinical information, often obtained as a result of much very detailed clinical work, is given by St. Bartholomew's Hospital, the Medical Women's Federation, and Cardiff, and is likely to be of wider use as this form of therapy becomes more general. Workers at St. Bartholomew's report that in most inoperable patients there is no difficulty in getting rid of the growth in the uterus and vagina, but in spite of this, growth tends to continue in the deeper tissues—i.e., round the rectum—and causes strictures. It is, however, by no means proved that all of these strictures are due to malignant growth, and it is regarded as possible that in some they are caused by fibrous tissue. The Medical Women's Federation discuss late radium reaction, symptoms appearing 6 to 12 months after irradiation. Pelvic and rectal pain, tenesmus, and blood and mucus from the rectum are characteristics of this reaction. In severe cases there was deep rectal ulceration, and in two fistulæ occurred. The undesirability of repeating the radiological treatment in these cases is stressed. In the majority of cases, even when the reaction was intense, the symptoms promptly subsided and the tissues rapidly regenerated. In some, repair was slow. The pathogenesis of the condition is obscure. Investigations are being carried out to find, if possible, the cause or the factors influencing its development. It is attributed by the workers to the result of an obliterative arteritis due to the irradiation, with a secondary infection of devitalised tissues. With one exception the rectal ulcers, including the two which produced fistulæ, were from one to four centimetres below the zone of the most intense irradiation. There was no evidence that the fistulæ were the direct result of too intense irradiation at these points. The screening has been increased in order to cut out more of the softer

[3] This means that the surface applicators used had filters attached which absorbed all but the gamma rays.

gamma rays so that the injury to the superficial tissues will be lessened without appreciably diminishing the distance dose.

The Cardiff report contains the following account of cases in which fistulæ formed :—

"Fistulæ of one kind or another developed in the course of radium treatment in 13 cases (out of a total of 139); this is a high percentage, but again it has to be remembered how advanced the cases were and the likelihood of fistula formation apart from radiation has to be borne in mind. From our clinical observations it cannot be accepted that in the majority of these cases the fistula was caused or even hastened by radium."

Cancer of the Mouth, Nasopharynx, Larynx, and Œsophagus.

These sites of cancer have, during the last few years, attracted much more attention than previously, and are, with the exception of growths in the œsophagus, looked upon as distinctly hopeful for the employment of radium therapy. Opinion still differs as to the best way in which to treat a primary carcinoma of the tongue with glands probably infected with growth. Whatever method is used, there is a consensus of opinion that these growths respond very much better when comparatively small quantities of radium are used and allowed to act for periods from 5–11 days, than when larger quantities are used for periods of 24 hours or less.

Mouth and Naso-pharynx.—At the Middlesex Hospital 30 cases of cancer of these parts were treated.

A scheme of irradiation is planned by making a scale model in plasticine of the area to be treated and indicating the suggested positions of tubes by means of coloured pins, each colour representing a certain size of tube. This is taken to the theatre and often affords the surgeon a useful guide to the proposed scheme. These models not only serve their immediate purpose, but, when the patient is seen later, it is possible to make a good comparison of the conditions before and after treatment.

At St. Bartholomew's Hospital 41 cases were treated, some of them by means of radium emanation in the form of radon seeds. These seeds have the following advantages :—

A small quantity of radon per seed is required, there is no cutting of the tissues on insertion, they are easily retained and easily removed, and they can be used upon out-patients. Possible disadvantages are that the filtration is inadequate, the reaction in mucous membranes is more severe than with needles, and the radon is rather concentrated.

The report states that there has been less success in the treatment of growths arising in the tonsils than of those in the other regions treated, and in fact there has been no case in which there has been apparent cure and even a temporarily satisfactory response is rare.

Birmingham records the treatment of 29 cases. Radio-necrosis, a late, troublesome, and very painful complication in mouth cases, occurred in two of the nine cases where the primary reaction was severe. It consists in a slow necrosis of the part of the alveolus affected, and is due to the tubes being placed in too close proximity to the bone. It is difficult adequately to screen off the bone, but the condition can be prevented by not giving too concentrated a dose near the bone.

The Dublin report states that 48 cases have been treated by means of radon, the vast majority of them being hopelessly inoperable. Special reference is made to the beneficial value of normal saline solution in the treatment of radium or X ray ulceration.

Larynx.—St. Bartholomew's Hospital reports upon four cases of intrinsic malignant growth of the larynx, only one of which failed to respond favourably to radium treatment. Of five cases which had transgressed the boundaries of the larynx proper, only one definitely improved; in this case the growth disappeared entirely, the patient remaining well for over two years.

Œsophagus.—Previous reports, in common with those from radium institutes in other parts of the world, have contained nothing that could be looked upon as a hopeful or favourable method of treatment of malignant growths of the œsophagus and this still remains the position. The Middlesex Hospital and King's College Hospital report cases treated, the latter centre having evolved a development of technique.

Carcinoma of Rectum and Bladder.

Records of technique are supplied by St. Bartholomew's Hospital and Birmingham.

Sarcoma and Lymphosarcoma.

The attempt which is being made to correlate the therapeutic results of radium with the histological character of these growths makes little headway; this is largely due to the comparative scarcity of any pathological description of the cases treated and reported upon by the various centres. So far as can be ascertained, the only reports this year which include definite histological information about the growths treated are from the Middlesex Hospital, St. Bartholomew's Hospital, and the General Hospital, Birmingham.

There is no record included in the report of the technique used or results obtained in any region of the body at the London Hospital, St. Peter's Hospital, and the Royal Infirmary, Aberdeen, though these centres are mentioned in the introduction to the report among those who have been supplied with radium for research purposes.

MEDICINE AND THE LAW.

Practice by the Unqualified.

THE difference between the professional monopolies of the legal and medical practitioners is believed to be unfamiliar to the public at large. At Marlborough-street Police-court last week Mr. Mead fined a firm of auctioneers and estate agents for having infringed the Stamp and Finance Acts by drawing up an "instrument relating to personal estate" without being duly qualified. The document related to a lease. Mr. Mead held that it amounted to a deed and was therefore an infringement of the statutes which guard the legal profession's monopoly. He fined each defendant £5, ordering one of them to pay £10 costs to the Law Society who had instituted the proceedings. "I think it a great indulgence on the part of the Legislature," remarked the magistrate, "to allow persons who have had no legal training to prepare documents of a legal nature; people might suffer injustice as a result; it is like an unskilled person acting as a doctor."

There is no doubt some analogy, as the learned magistrate suggested, between the danger to property caused by unqualified persons posing as legal experts and the danger to health caused by unqualified persons posing as medical experts. But the analogy is incomplete. The unqualified person who undertakes the functions of a solicitor can be punished by law; the unqualified person who undertakes the functions of a doctor goes free. Which is the greater danger to the public?

Christian Scientists Censured for Neglect.

At a recent inquest at Doncaster upon the death of a young man of 20 from tuberculosis there was medical evidence that he might possibly have recovered with proper attention. In returning a verdict of "death from natural causes," the jury recommended that the parents be censured. The parents, who were Christian scientists, had not called in a doctor to their son. In administering a severe censure, the coroner said that they had been guilty of gross negligence; if the boy had been 15 years of age he would have advised that they should be committed for trial for manslaughter. Their belief in Christian science, he said, would have been no defence if a charge of manslaughter were brought against them.

The coroner's warning was well founded. It has long been the law that, where a legal duty exists (under statute or under contract) to look after

prisoners, children of tender years, apprentices, or helpless persons, it is manslaughter to cause death by neglect to provide the requisite food, care, and medicine. The statutory duty of parents is set out in Section 12 of the Children Act, which re-enacted earlier provisions to the same effect. Religious beliefs are no defence. This was established in 1899 in *Reg.* v. *Senior*, where the charge related to the death of an infant of 8 or 9 months from diarrhœa and pneumonia. The jury found on that occasion that the child's life would have been saved if medical assistance had been given. The father was one of that sect which declines to call in a doctor and prefers to rely on a literal adherence to verses 14 and 15 of the fifth chapter of the Epistle to St. James:—

> Is any among you sick? Let him call for the elders of the church; and let them pray over them, anointing him with oil in the name of the Lord: and the prayer of faith shall save him that is sick, and the Lord shall raise him up; and if he have committed sins, it shall be forgiven him.

Mr. Justice Wills, who tried the case at the Central Criminal Court, drew the father's attention to the text: "They that be whole need not a physician, but they that are sick," but received the reply that those words were understood to apply to moral, not physical, sickness. The judge's careful summing up was referred to the Court of Crown Cases Reserved, where the observations of Lord Chief Justice Russell made it plain that the deliberate omission to call in medical aid, where necessary, for a child of tender years is not excused by the parent's peculiar religious tenets. A young man of 20, as in the recent case at Doncaster, is not a child or young person within the meaning of the Children Act; in such a case, therefore, there is no statutory duty on the parent under Section 12. There may, of course, be a moral duty, and there have been judicial dicta, which suggested that the existence of a merely moral duty would support a charge for manslaughter.

Crime and Epilepsy.

Robert Williams, indicted for the murder of Julia Mangan, a young Irish girl, who was found beside him in Hyde Park last October with her throat cut, has been found guilty of murder at the Central Criminal Court at his second trial. The jury had disagreed at the earlier trial before Christmas. At both trials evidence was offered for the defence to suggest that Williams might have murdered the girl in a state of epileptic automatism. A witness, who knew the accused's family, said he had known five instances of insanity on the mother's side. Dr. Gordon Hume, of Fitzroy-square, who attended Williams for neurasthenia, said that in October he considered him abnormal but not certifiable. Dr. J. C. Woods, lecturer on mental diseases at St. George's and London Hospitals, said that Williams was sane when he saw him in December, but he had formed the opinion that at the time of the tragedy Williams was suffering from an epileptic mental attack. Questioned by Mr. Justice Swift at the first trial, Dr. Woods said that many people of high intelligence were going about their work although suffering from epilepsy; he did not say they might commit murder to-morrow, but there were many who were subject to periods of automatism in which they were completely irresponsible. Dr. W. R. K. Watson, senior medical officer at Brixton Prison, said he had seen no signs of insanity or epilepsy in Williams. He saw nothing to show that Williams did not know the nature and quality of his act on the material date in October, but he could express no definite opinion, in view of the lapse of time between that date and his own examination of him. Williams's own story was that, while he was talking to the girl in the park, noises came into his head; it seemed as if steam were coming out of the sides of his head, and as if a red-hot iron were being pushed in behind his eyes. He thought he saw Lon Chaney, the film actor, in a corner making faces at him. He did not remember taking a razor from his pocket or using it on the girl or on himself; the next thing he remembered was a nurse washing his feet at the hospital. After sentencing the prisoner to death at the second trial, Mr. Justice Humphreys told the jury that, in accordance with usual practice, exhaustive inquiries would be made by the Home Office into the allegation of epilepsy. The Home Office had powers which neither judge nor jury possessed, for judge and jury were bound by the rules of evidence.

An Escaped Criminal Lunatic.

On the following day the same judge sentenced a man to 15 months' imprisonment for housebreaking and theft of jewelry who was an undoubted epileptic. Dr. Watson said the prisoner had had two fits in prison since Dec. 15th. There was evidence of very gallant service by him at Zeebrugge and in other naval battles. He had an injury on the left side of the skull, and there might be a depressed fracture there, or a foreign body in the brain. Dr. Watson did not think him insane. Since being invalided out of the Navy the prisoner has had many convictions for larceny, false pretences, housebreaking, and receiving. He was certified as insane while serving his last sentence, but escaped from Brentwood Mental Hospital. The judge observed that his present sentence would probably mean that the prisoner would go to prison and then be sent to an asylum until the expiration of his previous sentence. It would be for the prison medical authorities to decide if he were certifiable or not.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Indications for Artificial Abortion.

FORTHCOMING reforms in the criminal code will include many items of great interest to the medical profession. Under the present law medical men are authorised to induce abortion only in cases where pregnancy or birth endangers the life of the mother. For many years there has been a movement to allow them to do so when the financial or social condition of the pregnant woman makes it practically impossible to bring up the child properly. The Berlin Medical Chamber discussed this question at its recent meeting, and there were many different opinions. The Communist members proposed a resolution that medical men should be allowed to perform abortion for social reasons and that the endeavour to prevent conception should be encouraged instead of being hindered. After a long and animated debate the Chamber turned down this resolution by a small majority, but a motion that with the vital indication the social and eugenic indications should be given consideration was easily passed. The "eugenic indication" refers to cases of mental disease, epilepsy, abuse of spirits or alkaloids, and also to conception after rape. It was stated in the discussion that in Berlin the number of normal births and abortions is about equal and that 50 per cent. of the abortions are criminal. There are, of course, differences in various classes and places; according to the report of a great Berlin sick club there were 750 abortions against 150 normal births amongst its members. The criminal abortions are largely explained by the shortage of dwellings and the difficulty of bringing up children owing to lack of money. The prejudice against unmarried mothers, leading to their dismissal by private employers as well as State authorities, also promotes abortion on a large scale.

Schneeberg Disease.

The Occupational Diseases Compensation Act of 1925 has attracted attention to the so-called Schneeberg lung disease—a form of pulmonary cancer prevalent in workmen of the metal mines of Schneeberg in Saxony. According to Prof. Saupe, of Dresden, the stone dust of the mines where the men are employed contains up to 0·5 per cent. of arsenic and has a radio-activity of

50 Mache units, or more than twice that of the neighbouring radium spa of Oberschlemma. No organic virus which can be held responsible for the disease has been discovered. The workmen are permanently exposed to the pernicious dust produced by drilling machines. The clinical features of the disease are that they suffer frequently from chill and cough and from a discharge sometimes containing blood. There is a marked pneumokoniosis, and by and by they become weaker and unable to work. Dullness to percussion is noted in one or more regions of the lung, and a swelling of the axillary and supraclavicular glands may be detected. The blood shows leucocytosis and eosinophilia. Eventually the patients develop severe dyspnœa and cardiac insufficiency, and death follows a period of severe pain. Examination of the growths found in the lungs proves them to be cancerous, and the remarkable statement is made that sometimes two primary growths are present in the same patient. There is no doubt that the arsenic contained in the stone dust, the large quantity of radium, and the hard conditions of work are responsible for the disease. Schneeberg cancer develops rather slowly—sometimes after 10–12 years' work in the mines. In the neighbouring radium mines of Joachimsthal, Bohemia, a similar disease is seen, but not in other mines either in Europe or elsewhere. Fortunately these mines, which were opened in the Middle Ages, are already little worked, and there are now only about 100 miners left.

Glass Drain in the Pleural Cavity.

Dr. Relhef, a Bavarian country practitioner, has lately described an interesting case in the *Medizinische Welt*. A labourer was seriously injured at his work and three weeks later developed an abscess on the right side of the thorax. On being opened this showed a connexion with the pleural cavity and a glass drain was accordingly introduced. Some days afterwards the drain had disappeared, notwithstanding its accurate adjustment, and it was assumed that the patient in his delirious stage had thrown it away. His condition went on improving and he was able to resume his work a few months after the accident. He did so and experienced no pain during the subsequent nine years. Then in 1927 he twice had hæmoptysis, and radiography showed the glass drain broken in the region of the upper lobe of the lung. How it had been broken was not ascertained, although it seems probable that this happened when the man was kicked by a horse some time ago. There is no other case on record in which a glass drain has remained for so long in the thorax without producing any symptoms. An operation is under consideration, but the patient still withholds his consent as he has no pain from his foreign body.

Genital Derangements in Tobacco Workers.

Dr. Unbehann has recently published an account of the health of tobacco workers under treatment at the clinic for women's diseases in Giessen University. He says that they are especially liable to disturbances and irregularity of menstruation with severe pain. The fertility of these women, who mostly live in the rural districts of Hesse, is nearly that of the average population, but abortions are more than twice as common among them as among other women in the same part of the country. In three women smoking enormous quantities of cigarettes where a pathological examination of the ovaries could be performed the follicles showed a marked degeneration.

At the annual meeting of the German Red Cross it was reported that the Red Cross has 7363 local branches and subsidiary societies with 1,300,000 members. The number has increased since last year by 78,000 members. There are 8000 trained nurses belonging to the society. First aid was given during the year in about one million cases, and there is now hardly a place of importance in Germany without a Red Cross institution.

The wife of a medical man was fined M.20 because she drove her motor-car at a speed of nearly 35 miles an hour through a busy thoroughfare in Hamburg. On appeal she pleaded that on this particular occasion she was fetching her husband to a severely ill patient who had asked for an immediate visit. The court fined her only M.5, but regarded it as undesirable to endanger the life of several people in the hope of saving the life of a single individual.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Government Health Reports.

THE surgeon-general of the army, in his annual report, is satisfied with the health of the forces in 1927. The admission-rate for disease was 527 per 1000; for external causes 128. A slightly increasing rate for traumatism is attributed to more general participation in athletics and to the increasing use of motor vehicles. An increase in the annual death-rate is attributed to the occurrence of 90 cases of cerebro-spinal meningitis. The morbidity list is headed by bronchitis, tonsillitis, and gonorrhœa; the leading cause of death was suicide, whilst the most common reasons for discharge among enlisted men were dementia præcox, constitutional psychopathic state, and mental deficiency. The director of the Veterans' Bureau reports tuberculosis as the chief cause of death, 1753 deaths out of a total of 3831 in veterans' hospitals being caused by pulmonary tuberculosis. Of the 25,899 patients remaining under treatment more than half are in hospital on account of neuro-psychiatric disability. The majority of admissions to veterans' hospitals at the present time are for disabilities unrelated to war service.

In his report for the public health service Surgeon-General Cumming states that health conditions throughout the world were generally favourable during the fiscal year 1928. Only two cases of bubonic plague were reported in North America, both contracted from infected ground squirrels in California. For the calendar year 1927 the United States recorded 34,000 cases of small-pox, a total exceeded by only one other country—namely, India. In the summer of 1927 there was a widespread outbreak of infantile paralysis. Twenty-three States reported between them 73 deaths from rabies in the fiscal year 1928. Tularæmia has now been recognised in at least 31 States and in the district of Columbia. More than 200 cases of Rocky Mountain spotted fever were reported from nine States, and the surgeon-general expresses the opinion that many more cases escaped report. A large programme of research was carried through by the Hygienic Laboratory, including research in tularæmia, undulant fever, typhus fever, and small-pox vaccination, and the standardisation of scarlet fever antitoxin. The surgeon-general asks for increased facilities for the Hygienic Laboratory and for coördination of the public health activities of the Government. A Bill to establish a National Institute of Health was introduced on Dec. 11th to the House of Representatives and referred to the Committee on Inter-State and Foreign Commerce which, under the Constitution, is the committee most nearly suited to deal with public health. This Bill not only provides for the enlargement and improved equipment of the Hygienic Laboratory, but also authorises an appropriation of a million dollars for the foundation of a new research institute. Gifts are to be invited from the American people, and the income from such gifts may be used for the establishment of research Fellowships.

Health of Pre-school Children.

The National Congress of Parents and Teachers is a powerful organisation with 20,000 units representing every economic plane. In the last three years they have sponsored a movement to ensure that the children entering school each autumn shall do so without physical handicaps. A "summer round-up"

is organised during the long summer holiday; the youngsters undergo a medical examination, and every effort is made to have the "defects" corrected. During 1927, 13,768 children were examined in this way, and the movement is apparently still growing fast. The final object is continuous medical supervision of the children from birth to school age.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 5TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 188 (last week 131); scarlet fever, 2284; diphtheria, 1333; enteric fever, 30; pneumonia, 1921; puerperal fever, 44; puerperal pyrexia, 123; cerebro-spinal fever, 8; acute poliomyelitis, 7; encephalitis lethargica, 25; continued fever, 1; dysentery, 12; ophthalmia neonatorum, 107. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 16 counties: London, 14 (Lambeth 13, St. Pancras 1); Chester, 6; Derby, 27; Durham, 24 (Jarrow 12); Essex, 7 (West Ham); Huntingdon, 3; Lancaster, 9; Leicester, 11 (county borough); Northampton, 4 (county borough); Northumberland, 20 (Tynemouth); Nottingham, 5 (Worksop); Soke of Peterborough, 3; Stafford, 4; Yorks, West Riding, 20 (Halifax 8); Glamorgan, 22 (Merthyr Tydfil 10); Monmouth, 9.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Jan. 8th–9th was as follows: Small-pox, 32 (under treatment); scarlet fever, 2075; diphtheria, 2173; enteric fever, 17; measles, 39; whooping-cough, 565; puerperal fever, 22 (plus 9 babies); encephalitis lethargica, 74; poliomyelitis, 4; other diseases, 26. At St. Margaret's Hospital there were 13 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were no deaths from small-pox or enteric fever, 30 (2) from measles, 13 (4) from scarlet fever, 69 (22) from whooping-cough, 48 (5) from diphtheria, 60 (14) from diarrhœa and enteritis under two years, and 99 (18) from influenza. The figures in parentheses are those for London itself. The numbers of deaths from influenza during the previous seven weeks were 72, 49, 56, 60, 61, 69, and 83 respectively.

Liverpool reported 8 deaths from measles and Hull reported 5. Three deaths from scarlet fever occurred at Leeds, whilst whooping-cough caused 8 at Liverpool, and 5 each at Salford and South Shields. At Croydon there were 4 deaths from diphtheria, and at East Ham and Rhondda there were 3. Eight deaths from diarrhœa were recorded at Manchester, 6 at Liverpool, and 5 at Salford. Outside London the largest number of deaths from influenza was at Bristol and Liverpool (4 deaths each), whilst Plymouth Bury, Manchester, and Sheffield each reported 3. (Thirteen deaths from influenza occurred in Glasgow).

The number of stillbirths registered during the week was 258 (corresponding to a rate of 34 per 1000 total births), including 46 in London.

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

W. A. Sewell to be Hon. Surg. Comdr.

Proby. Surg. Lts. G. A. Mason and C. C. Ungley to be Surg. Lts.

INDIAN MEDICAL SERVICE.

Lt. W. J. A. Coldstream to be Capt.

Temp. Capt. Chandiram Ghurbamal Malkani relinquishes his temp. commn.

COLONIAL MEDICAL SERVICES.

Mr. A. R. Wellington (chief health officer, Federated Malay States) to be Director of Medical and Sanitary Services, Hong-Kong, and Mr. K. C. Yeo Assistant Medical Officer of Health. Mr. R. L. Cheverton, District Medical Officer (Cyprus); Lieut. S. P. Wilson, Medical Officer of Health (Gold Coast); and Mr. A. H. Lowther, Medical Officer (Straits Settlements).

Correspondence.

"Audi alteram partem."

THE TREATMENT OF EARLY BREAST CANCER.

To the Editor of THE LANCET.

SIR,—Various articles which have appeared in the last two issues of THE LANCET upon the treatment of carcinoma of the breast indicate that we have reached a critical phase in the evolution of this branch of surgery. For many years the treatment has seemed to be standardised in the form of a severe and mutilating operation which has been based on the work of Halsted and Sampson Handley. Your leading article of Jan. 12th characterises this standardisation as having been effected "at a very high level of efficiency." The technical efficiency of many surgeons has no doubt reached a very high level, but if the term "efficiency" is taken to include the end-results then the justice of your statement may be doubted. Private patients are apt to seek surgical treatment at a comparatively early stage of the disease, and the proportion of five-year survivals is admittedly fairly high. But no surgeon who has carefully followed a long series of hospital patients through the five years following operation is likely to plume himself upon the "efficiency" of his work. This healthy discontent is reflected in the contributions made by Mr. Sampson Handley and Mr. Duncan Fitzwilliams, whose opinions will command the greatest respect. On the one hand, Mr. Handley predicts "fresh triumphs" for radiology conducted on a scientific basis; on the other, Mr. Fitzwilliams seeks to escape from the mutilating operation of Halsted which has been imposed upon surgeons as a routine, and states his belief that a smaller operation is often equally good in its results. Your leading article expresses an impatience with both these views, and I should like to register my protest against the rather conservative tendency which your remarks seem to betray. It is my belief that "the whole paraphernalia of scalpels, clamps, and ligatures appertaining to a cutting operation" is indeed to be largely superseded before many years are past. The grounds of this belief will be found in the statement which I made at the International Cancer Conference last July, and in the fuller account of radium treatment carried out at St. Bartholomew's Hospital which was published in your issue of July 21st. The word "cure" in relation to any form of treatment of carcinoma of the breast can only be used with the greatest caution, but it does appear to me to be now much more nearly an established fact than a pious hope, that better results can be obtained by radiotherapy in breast carcinoma, late or early, than by operation. The local operation advocated by Mr. Fitzwilliams may sometimes be called for after radium has been applied; but it seems to me to be unlikely that I shall myself ever again perform the radical operation. This position has only been reached after a careful study during five years of the results obtained in 50 patients. It rests, I believe, upon a sound basis, and is largely shared by the surgeons of the Surgical Unit with whom I have been closely associated at St. Bartholomew's.

Mr. Sampson Handley emphasises the necessity for irradiating the area surrounding the growth as well as the growth itself. This principle I have long recognised, and I have applied radium mainly to the deep surface of the tumour, its periphery, and the tissues surrounding it, as well as to all accessible areas of lymphatic drainage. The results have been remarkable, and previous experience of large numbers of operated cases has convinced me that equally good results could not possibly have been obtained by operation in the same series of patients.

A doubt might be raised by the note published by Dr. H. Chambers and Prof. Russ in your last issue recording the production of a long latent period in the

growth of tumour cells by irradiation. The only clear inference, however, to be made is that the inoculated cells in their experiments had not received a *lethal* dose of X rays, such as is aimed at in the exposure to radium of a week or more which I have given. It seems unlikely that mere latency has been produced; for the complete clinical disappearance of a tumour has been repeatedly demonstrated, and in few instances the absence of carcinoma cells in a residual mass of fibrous tissue has been histologically proved.

Further justification of my contention can only be obtained by the passage of time. Meanwhile I believe that the surgical profession in general will do well to reconsider the position from this point of view.

I am, Sir, yours faithfully,

GEOFFREY KEYNES.

St. Bartholomew's Hospital, Jan. 14th, 1929.

SHOT IN THE VERMIFORM APPENDIX.

To the Editor of THE LANCET.

SIR,—The interesting paper by Prof. John Fraser upon his case of Shot in the Vermiform Appendix, and the letter from Prof. A. H. Burgess in your issue of Dec. 8th last, prompt me to record the following:—

A well-nourished man, aged 49, was sent to me in November, 1927, for radiological examination of the urinary tract, a provisional clinical diagnosis of stone in the right ureter having been made. The examination revealed the presence of a dense elongated shadow in the right side of the pelvis. From screen examination and radiography in the recumbent position (Fig. 1) it was impossible to decide

FIG. 1.

Radiogram with patient prone.

definitely whether the shadow was produced by a stone in the lowermost part of the right ureter or by shot in the appendix. This difficulty was overcome by taking a radiogram with the patient in the upright position when it became evident that there were several pellets in the appendix (Fig. 2). On its removal, the appendix was forwarded to me by the surgeon responsible, and I was able to radiograph and otherwise examine it intact. It contained 22 pellets. Several of the pellets were incrusted with salts and were faceted so as to resemble small gall-stones in appearance; their true nature was only apparent on section. The mucous membrane of the appendix was atrophied and studded with several small discrete papillomata.

The interesting point in this case is that the patient had not recently partaken of game; indeed, he could not recollect doing so since he was a boy. It is reasonable to suppose, therefore, that the shot had been in the appendix for a considerable time; and this is borne out by the incrustation of the pellets and by the atrophy of the appendicular mucous membrane. The attacks of colic appear to have been due to attempts made by the appendix to expel the pellets en masse. The presence of the papillomata is also interesting. If I am correct in believing that the papillomata were formed as the result of irritation of the mucosa, is it not possible that they might have eventually assumed malignant characteristics?

In my experience it has not been an infrequent occurrence to find evidence of shot in the appendix

FIG. 2.

Radiogram with patient upright.

upon an abdominal radiological examination. I agree with Prof. Burgess that, in the majority of cases, the shot are probably passed by natural means; and it is questionable whether, when they are found, the appendix should be removed unless there are signs pointing to disease of that organ. This case shows, however, that shot, when present in large numbers, may become impacted in the appendix and that there is danger, in such an event, of perforation and, possibly, of malignant changes supervening.

I am, Sir, yours faithfully,

Leeds, Jan. 1st, 1929. W. H. ROWDEN.

PITFALLS IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In to-day's issue of THE LANCET Dr. Vere Pearson mentions some of the traps that occur in the diagnosis of pulmonary tuberculosis. One of these is the question of hæmoptysis. A recent experience will illustrate the point. F., aged 50, had suffered from cough and "weak" chest for many years, and was regarded as phthisical because she had had repeated attacks of hæmoptysis. When she was seen in the spring of 1928 there was very little expectoration. Repeated examinations failed to reveal tubercle bacilli, and careful questioning showed that her "chest" attacks always commenced as a cold in the head. Investigation of her throat and nasal sinuses for a source of infection proved negative. A few days ago I was asked to see this patient, who lives in the country, with her doctor, because of a recurrence of severe hæmoptysis. She had had four attacks in the previous three days, and one was in progress on my arrival. Pulse-rate, 140; blood pressure, systolic, 160; diastolic, 100. Thinking that this would be an abnormally high pressure for her, if the condition was due to active tuberculosis, I inquired if there had been any premonitory symptoms some days before. I learned that round about Christmas she had felt poorly and could not eat. Examination of chest (brief, owing to her hæmoptysis) did not reveal much of a definite

nature, but on examining the abdomen, by palpation, I found that she was tender over the appendix and gall-bladder pyloric region. On testing a sample of the urine, it revealed acetone +++, bile +, albumin +, and what I call "leucin" bodies (? lipoid). This metabolic disturbance as a cause of hæmorrhages in various areas does not seem to have received the attention it deserves. During the past four months I have had several cases of severe epistaxis (two very severe), menorrhagia, severe hæmaturia in an old-standing pulmonary tuberculosis case during an acute allergic state, and others.

An interesting point appears in some of these cases. One of the epistaxis cases occurred after a slight operation done on the septum a fortnight before, and which had been soundly healed, and the patient returned home. Two of the menorrhagia cases had occurred in women who had been confined one or two months before, and where the lochia had been absent for weeks. It would seem as if, in those cases, there was a *locus minoris resistantiae* which decided where the hæmorrhage was to take place.

I am, Sir, yours faithfully,

R. CHALMERS, M.D., F.R.C.S. Edin.

Darlington, Jan. 12th, 1929.

THE TREATMENT OF HÆMORRHOIDS BY INJECTION.

To the Editor of THE LANCET.

SIR,—Mr. Arthur Morley's letter in your issue of Jan. 12th raises three points of interest to which, perhaps, you will be good enough to allow me to reply.

1. The question of sloughing following the injection of quinine urea hydrochloride, though a contingency which may be met with when any caustic solution is employed, is not one to which, in my opinion, undue importance need be attached. Quinine urea hydrochloride in a 5 per cent. solution is undoubtedly caustic; if it were not, its injection would not produce the reactionary fibrosis upon which the success of the treatment depends. Among the many reports of its uses is one dealing with the application of a 50 per cent. solution, applied by a spray or brush, in tonsillitis and in laryngeal tuberculosis; and though, admittedly, the conditions of submucous injection and external application are very different, one may assume that if a 5 per cent. solution is unduly caustic a solution of ten times that strength would be dangerously so. Bensaude admits that sloughing may occur, but says that the occurrence can be avoided if (*a*) one never injects an external pile or a prolapsed internal pile without first reducing it, and (*b*) if one makes one's injection as high up the rectum as possible, not in the pile mass but above it, and is careful to make the injection deeply into the submucous tissue. So far I have only had one case where sloughing occurred.

This was a lady who, four years ago, was operated on for an anal fissure and, at the same time, had had her piles dealt with surgically. When I first saw her she was suffering from marked internal piles accompanied by much hæmorrhage. A bar of fibrous tissue indicated the spot where the operation for the fissure had been performed, and at the proximal end of this bar was a freely bleeding internal pile. An injection made here was followed in three days by a sense of discomfort and fullness in the rectum. On examination a slough the size of a sixpenny-piece was visible. Further treatment was deferred for 15 days, at the end of which time the slough had separated; and, except for the three days' discomfort, the patient was no worse for the experience.

In this case the injection was made directly into the pile mass, and this fact, combined with the extensive fibrosis already present, may account for the necrosis.

2. Mr. Morley mentions that this method has been used by Dr. Tirrell and Dr. Chittenden Hill in the United States of America; but it should, I think, be made clear that both these proctologists advocate the introduction of the solution directly into the pile mass. This, at any rate, is the method explained in the last edition of Dr. Hill's book, but this book was published in 1926, and Mr. Morley may have been in communication with the author since that date. When in New York this summer I made various inquiries at the hospitals I visited, and I agree with Mr. Morley that the common practice is still the injection of carbolic oil. In my judgment, this state of affairs existed because the submucous injection by Bensaude's method was not then known. I pursued my inquiries only in New York; but no surgeon that I met was practising the method, and only one had any knowledge of it.

3. The relative value of the two antiseptics, carbolic in oil and quinine urea hydrochloride, is one on which an authoritative bacteriological opinion would be welcomed. In the absence of definite data I feel justified in questioning Mr. Morley's statement in regard to the comparative antiseptic powers of the two solutions. In a reference in Martindale (K. Taylor, li., 17, 294, 306) it is stated that quinine hydrochloride showed its greatest activity against the gas bacillus, was fairly active against the streptococcus, but little against the staphylococcus; and that the best antiseptic against the gas organism seemed to be quinine urea hydrochloride. The belief that quinine and its salts are powerful antiseptics is widely held, and if this is so one of the minor objections against the use of quinine urea hydrochloride must disappear. Mr. Morley further states in his letter that the carbolic oil solution "has the great advantage of being a powerful antiseptic and of being almost 'fool-proof' from that point of view." Is this so? Sir Lauder Brunton has said: "A solution of carbolic acid in oil is frequently used to lubricate and disinfect catheters, but Koch's experiments show that such a solution has no antiseptic power. . . ."

In the past 50 years a great many different solutions have been advocated for the treatment of this universal and distressing complaint. Amongst others, alcohol, salicylate of soda, quinine, and solutions of phenol have been recommended. Undeniably, carbolic in oil now holds the field, and in the skilful hands of Mr. Morley and others is undeniably efficacious. My opinion is that quinine urea hydrochloride is a better instrument, and time alone will show whether or not I am mistaken.

I am, Sir, yours faithfully,

CHRISTOPHER HOWARD.

Sloane-street, S.W., Jan. 14th, 1929.

ASTHMA RESEARCH.

To the Editor of THE LANCET.

SIR,—It seems to me doubtful whether the publicity campaign proclaiming that there is no cure for asthma is the best way to attract subscribers to the appeal now being issued for funds for research. In the past those unfortunate people, the asthmatics, have been treated as neurotics, and their symptoms stigmatised as nervous manifestations, and they were told they were incurable. While it must be admitted that we are painfully ignorant of the full biochemical phenomena taking place in this complaint, certain procedures have been discovered in recent years which have led to such an amelioration of symptoms as many patients are satisfied to call a cure.

Instead of reiterating the ancient parrot-cry that there is no cure for asthma, we can now encourage the asthmatic by telling him of the great advances made in treatment, and that, with few exceptions, there is hope for all. The following methods of outstanding value have each cured scores of cases: The régime of diet and exercise advocated by Dr. John Adam; the intravenous injection of peptone of Dr. Auld; the mixed coliform or entero-antigens of Prof. Danysz; the radiation of the chest of Mr. Gilbert Scott; the use of tuberculin and other work of Prof. Storm van Leeuwen; and last, but not least,

the dermal reactions as elaborated by Meltzer and other American workers. Given a knowledge of the various types of asthma, there is only one that is at present incurable, though even that type may be helped.

Naturally, I am entirely in favour of all research which may throw light on the problems of asthma, but I consider the public will be more ready to subscribe to a venture that has paid a dividend and can promise more than to one which advertises its insolvency, especially when as I, for one, believe the latter assertion to be untrue.

I am, Sir, yours faithfully,

London, W., Jan. 12th, 1929. FRANK COKE.

MEDICAL FOUNDATIONS.

To the Editor of THE LANCET.

SIR,—In your last issue attention was directed to two most excellent Medical Charities—namely, the Royal Medical Benevolent Fund and Epsom College. May I bring to the notice of your readers a third, the Society for Relief of Widows and Orphans of Medical Men, which is older than either of the two mentioned above, having been founded in 1788 and incorporated by Royal Charter in 1864. The objects of this Society are to help the necessitous widows and orphans of its deceased members, and the income of the Society enables it to make substantial grants yearly to those in need. Membership is open to any registered medical practitioner who at the time of his election is resident within a 20-mile radius of Charing Cross; the privileges of membership are retained should a member remove outside the area. The annual subscription is very small—£2 2*s.*, £3 3*s.*, and £4 4*s.*, according to the age of the candidate.

Should any medical man, who resides within the area, be desirous of joining the Society, I shall be very pleased to send him full particulars.

I am, Sir, yours faithfully,

EDWARD J. BLACKETT, Secretary.

11, Chandos-street, Cavendish-square, W.1,
Jan 10th, 1929.

ACTINOMYCOSIS OF THE APPENDIX.

To the Editor of THE LANCET.

SIR,—I venture to question the accuracy of the diagnosis in the case reported by Dr. F. M. G. Sinclair and Dr. S. C. Dyke in to-day's issue of THE LANCET as Actinomycosis of the Appendix. In so doing I will not stress the pathological findings, which are notoriously difficult of interpretation in these cases unless the typical granules are found in the pus at some stage of the disease. I intend to confine myself to the clinical aspect of the account.

In whatever part of the body actinomycosis may be found the pathological changes follow a very definite series of stages. The first reaction is the formation of a dense, tumour-like mass which is the result of a connective tissue proliferation. Later, at various points in this mass, softening takes place with a discharge of pus in which the characteristic granules may be found. In my experience careful search over a period will, sooner or later, be rewarded in cases of true actinomycosis. In my own cases, and in those recorded in the literature, the disease has always attacked the retroperitoneal tissues of the right iliac fossa or the muscular layers of the anterior abdominal wall. In no case within my knowledge has an infection of the peritoneal cavity occurred at the early stage of two weeks after the appendicectomy. It is a well-known fact that the peritoneum is extraordinarily resistant to this form of infection and only falls to it in the final stages of the disease, when an abscess in the liver has ruptured into the general peritoneal cavity. In my opinion the absence of any tumour-like formation, the presence of pus in large quantities within a fortnight of the original operation, and the rapid breaking-down of the wound, with exposure of the intestines, are points which negative the diagnosis of actinomycosis. On the other hand, the whole clinical history from beginning to end is typical of an ordinary pelvic abscess secondary to an acute appendix.

I have been interested in the subject of actinomycosis following acute appendicitis for some time and, in my experience, the finding of a Gram-positive streptothrix-like structure in pus from cases of acute appendicitis is not uncommon, but it is not sufficient evidence to justify a diagnosis of actinomycosis. When, in addition, the whole clinical picture is so unlike that usually found in this type of infection, then I fail to find any grounds upon which such a diagnosis can be suggested, much less maintained. The treatment of abdominal actinomycosis is fraught with so much difficulty and anxiety that I feel the diagnosis must be very certain before cases are reported as such, especially when the account contains even an implied suggestion of benefit from some form of specific treatment.

I am, Sir, yours faithfully,

R. ST. LEGER BROCKMAN.

Sheffield, Jan. 12th, 1929.

THE HEALTH OF THE YOUNG WORKER.

To the Editor of THE LANCET.

SIR,—The leading article in your issue of Jan. 12th, in which you draw attention to the gaps in the provision of medical attention for the young worker, prompts me to describe a scheme which has been for many years in force in a community of workers and their dependents. I refer to the Medical Fund of the Great Western Railway at Swindon, to which I am consulting pathologist.

The "benefits" provide for the care of an industrial population from birth to death, and comprise on the consultant staff a physician, surgeon, pathologist, and radiologist, with ten whole-time medical officers and a large (and very fully engaged) dental staff. Facilities are also provided for the customary special departments. The service is given in a hospital, a large out-patient department, and by domiciliary visits. For those who come under the National Health Insurance Act, the contracting out is arranged under the clause whereby the employee is allowed to make his "own arrangements" for medical attendance. For a few pence per week the insured person can secure for his wife, children of all ages, and other dependents all the benefits of the fund, which, incidentally, is in a very sound financial position.

It would seem that in this scheme there are not only no gaps, but the service is far more extensive than that provided under the Education and National Health Insurance Acts. Moreover, there is no official control of prescribing, or of the quality or quantity of the drugs supplied. It has also another advantage—namely, that by careful medical records it is possible to do a good deal of preventive work, and as the importance of this has been inculcated in the patients of the clinic by the medical staff, it is well recognised by members of the fund, so that, in practice, advice is sought not only for obvious disease, but for cases of indefinite illness. Another point that appeals very much to a clinical pathologist is the opportunity for research and also for consultation with one's colleagues at the bedside which is afforded. I have myself, for instance, found it possible to obtain a large amount of clinical material for almost every variety of anæmia and for obscure types of systemic infection.

It is true that we are dealing with a community which can be fairly easily served, but I suggest that a public health administration exists, not to create, but to diminish "official" difficulties and that it should not be impossible to provide continuous and effective medical treatment without "gaps" both in age and in facilities for specialist services, which exist in the

present system to which your article so aptly draws attention. I would add that the Swindon Clinic is in no sense a State medical service; it is, in fact, administered by a committee elected by the contributors to the fund, membership of which, incidentally, is not compulsory.

The advantages of eliminating the approved society in deciding how little benefit additional to the bare provisions of the Insurance Act shall be accorded to the worker, and of the continuous medical supervision from birth of the prospective worker without charity or interference by committees whose efforts may be actuated rather by emotions than by knowledge, seem to me to be inestimable. The keynote of the scheme, as it seems to me, is direct service of the worker and his dependents by a medical staff, who are independent of approved societies and State interference, and who can provide a "team" investigation and treatment of any given patient from start to finish. I imagine that this is financially possible only by eliminating administrative expenses, which have been found in practice to be quite unnecessary, but which must necessarily bulk large in any scheme administered by officials paid out of public funds.

I am, Sir, yours faithfully,

A. KNYVETT GORDON, M.B. Camb.

Bedford-square, W.C., Jan. 15th, 1929.

HISTORY REPEATS ITSELF.

To the Editor of THE LANCET.

SIR,—In Matthew Paris's "English History," Bohn Series, vol. iii., under the year 1256, occurs the following statement which bears a remarkable similarity to recent occurrences in Holborn. "About the same time, as some workmen were digging out the bed of an aqueduct at London, to clear the bed of mud (for the water had ceased to flow) a sudden explosion burst forth from the ground accompanied by a flame similar to the fire of hell, which in the twinkling of an eye suffocated several of the workmen, killing one of them on the spot, and so burning, maiming, and disfiguring others that they were entirely useless to themselves ever afterwards. There were some who said that this explosion occurred as by a miracle, because these men were engaged in servile work at an improper hour in the evening."

I am, Sir, yours faithfully,

London, Jan. 11th, 1929. R. R. JAMES.

PLEURAL PUNCTURE.

To the Editor of THE LANCET.

SIR,—As a university examiner in medicine during the last two years, I have been surprised by the fact that no single candidate to whom I have shown Potain's aspiration set has been able to assemble this apparatus; many candidates, indeed, have declared that they have never seen it before, and have no idea for what it is used. On comparing notes with other examiners, I find that their experience coincides with my own. It would appear that it has become the accepted practice to aspirate the pleural space by means of a 10 c.cm. syringe and needle. If this is really the case, I suggest that all teachers of medicine should ask themselves whether it is in the best interest of the patient that, under any circumstances, his chest should be aspirated in so perfunctory a manner. In my opinion there is only one thing to be said in favour of the syringe and needle method—it saves a certain amount of trouble. I am convinced that many empyemata go undiagnosed, sometimes till they are beyond surgical treatment, because they have been sought for in vain by the syringe and needle, whereas they would have been discovered in time had a wide-bore trocar and cannula been employed. The lumen of the needle used with a syringe is easily blocked by the thick layer of lymph which often lines an empyema cavity; moreover, the pus of the empyema may be so thick as to be difficult to aspirate through any but a wide-bore needle. If sufficient care is taken over the preliminary local anæsthesia, aspiration should be a painless operation, even when the largest cannula is employed, and it is possible, using the blunt trocar, once the pleura has been penetrated, to explore the pleura with safety in various directions through one skin puncture, a manœuvre which is quite out of the question with a 10 c.cm. syringe and needle. Finally, if fluid is encountered, it is difficult to evacuate this satisfactorily by means of a syringe and needle. With the Potain, or some similar apparatus, an empyema may be partially or completely evacuated before drainage is performed, and this I believe to be sound treatment, sometimes life-saving. I must apologise for occupying your space by a recital of rudimentary principles in the technique of pleural aspiration, but even if these principles are accepted they are apparently not taught.

I am, Sir, yours faithfully,

London, W., Jan. 15th, 1929. MAURICE A. CASSIDY.

THE FUTURE OF GENERAL PRACTICE.

To the Editor of THE LANCET.

SIR,—I read with great interest the leading article on this subject in your issue of Jan. 5th. The problem that is actually arising in general practice is the outcome of the assiduous efforts of reformers of the social system to cater for the health of the public. These persons feel that a State-administered medical service will provide for these needs. In the impoverished circumstances of the community by exploiting the doctor some attempt can be made to ensure an abundance of medical attention. The channels through which the work is being conducted are the public health services. Originally these departments confined themselves to the care of the public as a whole. The drainage and water-supply was looked after. Infectious cases were followed up and isolated, not with a view to dealing with the stricken individual, but to prevent him being a menace to others. The next step was in the direction of dealing with the tuberculous. A certain measure of treatment had to be provided in the attempt to stamp out the disease and prevent dissemination. This could still be considered a prophylactic public health measure, the treatment of the individual being justified by the fact that in curing him infection was being checked. On the other hand, it was a commencing incursion into the field of the practitioner of medicine. The individuals of a borough paid their rates and contributed to these schemes so that measures could be carried out because they were prophylactic to the community as a whole.

Contrast these measures with present-day child welfare activities, where treatment, masquerading in the guise of prophylaxis, is given at baby clinics. Is it any longer a public health service or an individual attention service, when publicly paid medical officers have to decide whether a baby has gained a requisite number of ounces each week, or is in the incipient stages of rickets. This is a definite attempt at State control in a certain branch of medicine, and the same tendency is manifesting itself in obstetrics. If honesty was the energiser of these schemes for prophylaxis, how is it that the first principle of immunity, the establishment of a natural resistance by a sufficiency of food, is so easily overlooked?

Before fault is found with the system of general practice as now conducted, measures should be taken to enhance the practitioner's clinical skill and his clinical material should not be perpetually encroached upon.

Opportunity for reform is at hand in the new De-rating Bill. The newer generation of practitioners should be encouraged to have some specialty. There should be competent physicians, surgeons, obstetricians, &c., amongst them in each district. They should have held appointments at hospitals and

should be given charge of beds in the infirmaries of the future. They should be paid adequately for this work, and the remuneration should be on a piece-work basis. It might very well be on a relief-ticket system for those sick that are improvident. General practice could still be conducted on the best lines of the past, but consulting opinion would be within call of every pocket, and the public would be educated into realising that their family doctor was still the sound man he was, even if he had to call in the assistance of a colleague in a branch of medicine in which he was not specialising. This would be the fair and honourable treatment for the general practitioner. And the patients would stand to benefit. The contact would remain a personal one still, which is undoubtedly all-important for the very best service.

But should a public service come, and the exploitation of the profession be carried to the uttermost limits to which it is now tending, the recruitment of medicine will be as successful in this country as for some of the Colonial medical services. Succeeding generations will resist the lure of becoming underpaid exploited clinical machines, even though they might suspect themselves as being a sop in the political game. I am, Sir, yours faithfully,

London, W., Jan. 12th, 1929. DEEPLY INTERESTED.

Obituary.

THOMAS EDWARD HOLMES, M.D. CAMB., D.P.H.

THE public health service is deprived of a capable and loyal member by the death of Dr. T. E. Holmes at the early age of 53. As medical officer for the county of Nottingham for the past five years he had borne increasing responsibilities under increasing disabilities of health, but continued to discharge his duties until almost the end of his life.

Son of the late Edward Holmes, chief constable of Leicestershire, he started his medical education at Cambridge, where he took a second class in the Natural Sciences Tripos in 1897. Thence he went on to Guy's Hospital and soon made his mark as a student. On graduating in 1900 he held a succession of appointments to the resident staff; they included that of ophthalmic surgeon, and for many years ophthalmology was of special interest to him. From London he went to Bristol, where he became assistant physician and pathologist to the Royal Hospital for Sick Children, and these and other medical experiences gave him an unusually wide basis for the public work that next received his attention. Appointed school medical officer for Nottinghamshire, he had already acted as deputy for the county M.O.H., the late Dr. Henry Handford, when his work was interrupted by the war. Holmes joined the Royal Army Medical Corps with a temporary commission, but on retiring with the rank of major returned to Nottinghamshire to his old work. On Handford's retirement he succeeded him as medical officer, after a trying period during which the county council tried to fill the vacancy by finding a candidate who would accept a salary below the usual scale. The council's attitude cannot have made the tasks of office more congenial, especially to a man of Holmes's retiring and sensitive disposition; but despite such difficulties and, later, the handicap of poor health, he was able to accomplish many of the schemes which he had planned, and his faithful work is bearing fruit in many directions.

Dr. Holmes leaves a widow with one daughter.

SIR DAVID MAURICE SERJEANT, K.B.E., M.D. ST. AND.

Sir David Serjeant, who died last Saturday, was, we believe, the oldest member of the medical profession in this country, being within a few days of his ninety-ninth birthday. The career thus closed was one of exceptional variety and interest. Born in Huntingdonshire in 1830, the son of a lawyer, Serjeant was early apprenticed to a surgeon in Peterborough, but at the age of 22 left medicine behind for the time being and set out for Australia, where he arrived in time to play in the two first inter-colonial cricket matches. Refusing settled employment, he set out for the goldfields and prospected there for a year or more, but the chances of pioneer life sent him back to Melbourne to turn his hand, after the fashion of the time and country, to all sorts of trades. In 1859 he returned to England and set his mind to medicine at Guy's Hospital, whence he qualified as M.R.C.S. and graduated at the University of St. Andrews in 1862. Joining the P. and O. service he went East again as ship's surgeon and spent many years in this employment before finally returning to England to take up practice in Camberwell. His principal work was found when he was appointed district medical officer and public vaccinator with charge of what is now St. Giles's Hospital. This post he held for a great many years, and he even returned to the practice of medicine during the late war. In 1922 he was created K.B.E.

Sir David Serjeant became medical officer to the Camberwell National Reserve in the early days of his medical practice, and claimed to be the oldest British Volunteer. He married in 1872 Helen, daughter of the Rev. Robert Dear, and had a son and three daughters, one of whom is a member of the medical profession.

WILLIAM LATIMER STOREY, M.D. R.U.I.

THE medical profession in Belfast sustains a sad loss by the death on Jan. 5th of Dr. W. L. Storey. A son of the late John Storey, J.P., of Ballmamore, County Leitrim, he was born in Quebec in 1861, and was educated at Queen's College, Belfast, graduating as M.D. in the Royal University of Ireland in 1889. His life was spent in general practice in Belfast, where he took a lifelong interest in medical societies and was for many years the energetic hon. secretary of the local division of the British Medical Association and hon. librarian of the Ulster Medical Society. To both of these he contributed various papers, some scientific, others in lighter mood, but all of them remarkable for literary style, evidence of wide culture, and a rich gift of kindly humour. Of a somewhat shy and retiring disposition he was deservedly popular with his medical colleagues, who appreciated his sound judgment, his loyal friendship, and his quick wit. He married, in 1890, Elizabeth, daughter of William Betty, of Cappy House, County Fermanagh, and she survives him with a son and a daughter.

WE regret to record the death of two brothers, ARTHUR BROWN SMITH and SYDNEY MCKENDRICK SMITH, whose work seemed to be of much promise and whose contributions to the literature of radium therapy had already begun to attract attention. Of twin birth and about 30 years of age, their careers were closely bound together. Thus, after graduating in medicine at Edinburgh in 1923, they both secured resident appointments at Addenbrooke's Hospital, Cambridge, and both studied the technique of radium treatment at Paris and Brussels and later in Sweden. In 1926 Dr. A. B. Smith took the diploma of F.R.C.S. Edin. and soon afterwards the brothers settled down in a joint practice in Harley-street, also seeing patients by arrangement in Edinburgh. A short book which they published in 1927 on "Radium in Cancer and the Surgery of Access" was useful especially because it showed the necessity for collaboration between surgeon and radiologist. Although their knowledge at this stage was necessarily derived largely from Continental authorities, there was reason to hope that increasing experience of radium would enable them to produce valuable original work. They had been for some time associated with the joint radium committee of hospitals connected with the University of Sheffield, in the capacity of honorary advisers.

Medical News.

UNIVERSITY OF CAMBRIDGE: *Pinsent-Darwin Studentship.*—Dr. R. A. McCance, of the pathological department of King's College Hospital, has been appointed to this studentship for a period of three years from Feb. 1st, 1929. His predecessor, the first holder of the studentship, was Dr. R. D. Gillespie, who has been investigating the relationships of traits of personality to psychoneuroses and the criteria for the differentiation of types of depression.

UNIVERSITY OF LIVERPOOL.—At a recent examination the following candidates were successful:—

DIPLOMA IN PUBLIC HEALTH.

R. M. Jones, J. Litt, F. R. O'Sheil, and J. T. C. Roberts.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a quarterly meeting of the Council on Jan. 10th, Sir Berkeley Moynihan, the president, in the chair, the first award of the Hallett Prize was made. In pursuance of a report from the Board of Examiners in Anatomy and Physiology for the Fellowship, regarding the result of the Primary Examination for the Fellowship concluded on Dec. 14th, this prize was awarded to Shantilal Jamnadas Mehta, M.B., of Bombay University and Middlesex Hospital. The Hallett Prize was instituted as a tribute to the services of Sir Frederic Hallett, late secretary of the Examining Board in England, during his 50 years' service with the College.

The diploma of Fellow was conferred upon James Eastwood Sykes, M.B. Liverp., Liverpool and St. Bart.'s, who has passed the requisite examinations and has complied with the by-laws.

The diploma of Member was conferred upon the following who have passed the necessary examinations: M. K. Gyi, Guy's; J. F. V. Lart, Camb. and St. Thomas's; B. W. Rycroft, St. Andrews Univ.

The undermentioned diplomas were conferred (jointly with the College of Physicians) upon the following candidates:—

Diploma in Laryngology and Otology.—M. I. Ashmawi, A. Blagoff, N. M. Eadie, M. Husnain, N. H. Meacle, H. V. O'Shea, H. M. Petty, S. Roy, E. C. Tamplin, and W. L. Thomas.

Diploma in Psychological Medicine.—R. W. Armstrong, Eileen A. Chennell, A. Craig, H. Hinchco, Phyllis M. Horton, D. L. McCullough, D. Menzies, J. E. Nicole, Muriel L. M. Northcote, Eveleen J. O'Brien, J. C. Ramsay, and C. E. Roachsmith.

POST-GRADUATE COURSE ON NERVOUS DISEASES.—A course on Diseases of the Nervous System will be held at the National Hospital, Queen-square, London, W.C., from Jan. 28th to March 22nd, consisting of 32 clinical lectures and demonstrations at 3.30 P.M. on each week-day except Wednesday and Saturday, together with teaching in the out-patient department at 2 P.M. daily (except Saturdays), and pathological lectures and demonstrations at noon on Mondays. Eight lectures on the Anatomy and Physiology of the Nervous System will be given at noon on Fridays if there are enough applicants, and 12 clinical demonstrations, chiefly on methods of examination of the nervous system, have been arranged to take place at noon on Tuesdays and Thursdays. Further information may be had from the Secretary of the Medical School at the Hospital.

BRITISH EMPIRE CANCER CAMPAIGN.—At a meeting of the Council on Jan. 14th, with the Marquis of Reading in the chair, the following were invited to become Members of the Grand Council: Mr. Malcolm Donaldson (St. Bartholomew's Hospital), Mr. R. G. Hogarth (Nottingham), Sir Ernest Swinton (Professor of Military History at Oxford), and Mr. Cecil Rowntree (Cancer Hospital).—Grants made included a sum not exceeding £2500 for cancer research at St. Bartholomew's Hospital, £150 to Prof. A. J. Clark for radiological research at Edinburgh, and a contribution of £100 towards statistical investigations by the Yorkshire Council of the Campaign.—The Grand Council confirmed the recommendation that two prizes of £500 each, with an appropriate medal, should be offered in the years 1931 and 1933 respectively for the best original piece of work carried out in the British Empire on the investigation of cancer. The prizes will be known as the Garton Prizes and Medals and the actual subjects will be chosen by the Investigation Committee of the Campaign. The competitors may be either single research workers or a team of scientists working together.—Vacancies on the Scientific Advisory Committee were filled by nominations through the Royal Society—namely, Dr. Mervyn Gordon, F.R.S., Mr. J. C. Drummond, D.Sc., and Prof. Sidney Russ, D.Sc.

HUNTERIAN SOCIETY. — The banquet to commemorate the 201st anniversary of the birth of John Hunter will be held at the May Fair Hotel, Berkeley-street, London, W., on Thursday, Feb. 14th, at 7.15 for 7.30 P.M.

THE death is announced of Dr. Henry Selfe Bennett, the last surviving son of Sir Risdon Bennett, at his residence in Upper Berkeley-street on Jan. 13th, aged 81.

ELIZABETH GARRETT ANDERSON HOSPITAL.—The Downs School, Seaford, have promised to endow a bed at the Elizabeth Garrett Anderson Hospital. The Queen will visit the hospital in the spring to open new extensions.

ANCOATS HOSPITAL.—Last year Ancoats Hospital, Manchester, treated 21,228 accident and emergency cases. With only 114 available beds 2589 in-patients were treated, and to meet the demands upon the hospital at least a further 100 beds are needed.

PAY BEDS AT WESTMINSTER OPHTHALMIC HOSPITAL.—Fourteen rooms for paying patients, together with a patients' sitting-room, have been opened at this hospital. A children's department is now being prepared, the walls covered with tiles illustrating nursery rhymes.

BIRMINGHAM GENERAL HOSPITAL.—Pending the erection of a new hospital adjoining the University at Edgbaston, the governors have decided to meet the prevailing congestion by providing temporary buildings with at least 40 beds and a new casualty department on the site of St. Mary's Churchyard. A maximum of 30 beds are to be set aside for patients already admitted owing to accidents or emergencies or because the treatment they require can be given only at a general hospital and are in a position to pay for the entire cost of their treatment. A periodical census has shown that there are usually 30 such patients in the hospital, and they will now be asked to pay for their treatment and a limited fee to the member of the medical staff in charge of them.

ROYAL SALOP INFIRMARY.—In accordance with a custom dating back 182 years the annual Royal Salop Infirmary service was held in St. Chad's Church, Shrewsbury, on Sunday week. The service is held in the same week as the annual ball of the Shrewsbury Hunt Club, and it is the rule that the plates for the collection should be held by a recent Shropshire bride and a débutante at the hunt ball. This year the bride was Lady Stanier, the wife of Sir Alexander Stanier, and the débutante Miss Agnes Colville, of Coton Hall, Bridgwater. Custom requires that they shall be attended by "two gentlemen of distinguished rank and fortune" in the county. This year these gentlemen were Mr. John Donaldson-Hudson, son of Lieut.-Colonel R. C. Donaldson-Hudson, chairman of the infirmary board, and Mr. Rex Holcroft, of Eaton Mascott Hall, and the collection amounted to £407. The infirmary has ended its year with a deficiency of £1200 on an expenditure of £18,800.

NATIONAL COUNCIL FOR MENTAL HYGIENE.—A series of eight lectures will be delivered in the Lecture Room of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Wednesdays, at 5 P.M. The first three lectures on Jan. 23rd, 30th, and Feb. 13th have as group title Dangerous Ages, and are to be delivered respectively by Dr. J. A. Hadfield (Childhood), Dr. H. Crichton-Miller (Youth), and Dr. Helen Boyle (Middle Age). On Feb. 20th Dr. Letitia Fairfield will lecture on Efficiency and Deficiency, and on the 27th Dr. W. A. Potts on the Irresistible Impulse. The three concluding lectures on March 6th, 13th, and 20th will be given by Dr. Bernard Hart, Sir Maurice Craig, and Dr. C. H. Bond, the subjects being the Minor Mental Disorders of Every-day Life, the Problem of Nervous Breakdown and the Mental Hospital of To-day. Tickets may be obtained from the secretary of the Council at 78, Chandos House, Palmer-street, London, S.W. 1.

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Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.

THURSDAY, Jan. 24th.—4.30 P.M.—*The following papers will be read:* D. Denny-Brown: On the Nature of Postural Reflexes. D. Denny-Brown: The Histological Features of Striped Muscle in Relation to its Functional Activity. (Both communicated by Sir Charles Sherrington.) W. S. Stiles: The Effect of Glare on the Brightness Difference Threshold. (Communicated by Sir John Parsons.) L. J. Harris: The Combination of Proteins, Amino-acids, &c. with Acids and Alkalis. Part II., Titration Curves of Amino-acids, in presence of Formol. (Communicated by Sir Frederick Hopkins.) *The following papers will be read in title only:* F. W. R. Brambell and G. P. Marrian: Sex-reversal in a Pigeon (Columba livia). J. B. Gatenby and Sylvia Wigoder: The Effect of X Radiation on the Spermatogenesis of the Guinea-pig. (Both communicated by J. P. Hill.) J. B. Gatenby and Sylvia Wigoder: The Post-Nuclear Body in the Spermatogenesis of Cavia corbaya and other Animals. (Communicated by E. S. Goodrich.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY, Jan. 23rd.—5 P.M., COMPARATIVE MEDICINE and TROPICAL DISEASES. Special Discussion on Glanders and Kindred Diseases. Speakers: Prof. F. T. G. Hobday, Prof. G. H. Wooldridge, Dr. Minett, Mr. J. W. McIntosh, Mr. E. A. West.

THURSDAY.—8.30 P.M., UROLOGY. Paper: Sir William de Courcy Wheeler: Traumatic Rupture of the Urethra.

FRIDAY.—5 P.M., CHILDREN. (Cases at 4.30 P.M.) Cases will be shown. 8 P.M., EPIDEMIOLOGY. Discussion: Vaccination against Small-pox in the Light of Recent Experience. Openers: Dr. Ledingham and Dr. G. F. Buchan.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, Jan. 25th.—8.30 P.M., Papers will be read by Dr. W. D. Nicol and Dr. G. M. Mackenzie on the Treatment of General Paralysis of the Insane by Pyrotherapy. A discussion will follow.

THE MEDICO-LEGAL SOCIETY.

THURSDAY, Jan. 24th.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.) A Joint Debate between the Medico-Legal Society and the Society of Medical Officers of Health (Maternity and Child Welfare Group) on Criminal Abortion, and Measures Necessary to Reduce the Sale of Abortifacient Drugs. The Debate will be opened by Dr. F. J. McCann, who will be followed by Dr. R. A. Lyster, Sir Bernard Spilsbury, Mr. H. Beckwith Whitehouse, and Mr. H. D. Roome.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

WEDNESDAY, Jan. 23rd.—5 P.M (at St. John's Hospital, 49, Leicester-square). Dr. Goldsmith: The Acnes.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn, W.C.

MONDAY, Jan. 21st.—5 P.M., Sir Arthur Keith: The Anatomy and Evolution of the Human Brain. 4th Hunterian Lecture.

WEDNESDAY.—5 P.M., 5th Hunterian Lecture.

FRIDAY.—5 P.M., 6th Hunterian Lecture.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 21st, to SATURDAY, Jan. 26th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Lecture by Dr. Robert Hutchison: Pitfalls in the Diagnosis of Dyspepsia, on Mon., at 5 P.M.—CHILDREN'S CLINIC, Western General Dispensary, Marylebone-road, N.W. Dr. Bernard Myers: The Nervous Child in our Midst (Cases); assisted by Dr. Mackenzie Wallis. Demonstration: Method of Biochemical Examination of the Blood in Neurotic Children. Mon., at 3 P.M.—ST. MARY'S HOSPITAL, Paddington, W. Mr. Zachary Cope: Demonstration, on Wed., at 2 P.M.—WELLCOME MUSEUM OF MEDICAL SCIENCE, 33, Gordon-street, W.C. Demonstration by Prof. Hugh MacLean on the Medical Treatment of Gastric and Duodenal Ulcer, on Wed., at 4 P.M. The above are free.—QUEEN'S HOSPITAL FOR CHILDREN, Bethnal Green, E. Post-graduate Course in Diseases of Children for two weeks. Further particulars from the Secretary. Telephone: Mayfair 2236.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Jan. 21st.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M. Medical, Surgical, and Ear, Nose and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Jan. 24th.—4 P.M., Mr. Addison: Acute Osteomyelitis.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Jan. 22nd.—2.15 P.M., Mr. W. B. Gabriel: Fractures of the Spine with Demonstrations of Old Cases.—3.15 P.M., Dr. C. Gouldesbrough: X Ray Diagnosis of Pulmonary Tuberculosis.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Jan. 25th.—4 P.M., Mr. Andrew Wylie: Tuberculosis of the Larynx.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Jan. 22nd.—5 P.M., Dr. H. G. Adamson: Erythema Multiforme.

THURSDAY.—5 P.M., Dr. J. H. MacLeod: Ringworm Infections.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURE, Manchester.

FRIDAY, Jan. 25th.—4.30 P.M. (at the Whitworth-street West Branch). Dr. Lapage: The Diagnosis and Treatment of Acute Cerebral Conditions in Children.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, Jan. 25th.—3.30 P.M., Mr. Townrow: Clinical Cases.

Appointments.

ROY, DONALD W., M.B., B.Ch. Camb., F.R.C.S. Eng., has been appointed Obstetric Surgeon to St. George's Hospital.

SAINT, J. H., M.D., B.S. Durh., M.R.C.S., Resident Medical Officer to the Freemasons Hospital and Nursing Home.

Vacancies.

For further information refer to the advertisement columns.

Birkenhead General Hospital.—Hon. Physician.

Bradford Royal Infirmary.—Two H.S.'s. Each £150.

Brighton, Royal Sussex County Hospital.—Hon. Medical Clinical Asst. Also H.S. £150.

Cardiff City Mental Hospital, Whitchurch, near Cardiff.—Med. Supt. £1000.

Charing Cross Hospital, W.C.—Asst. Physician.

Chiswick General Hospital, The Mall, Chiswick, W.—Additional Second Hon. Consulting Surgeon.

Coventry and Warwickshire Hospital.—Res. H.S. £125.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Asst. Pathologist. M.A.B. Bio-chemist at the Board's Antitoxin Establishment, Sutton, Surrey. £600.

Evelina Hospital for Children, Southwark, S.E.—H.P. At rate of £120.

Great Yarmouth General Hospital.—H.S. £150.

Infants Hospital, Vincent-square, Westminster.—H.P. At rate of £75.

Lancaster, Royal Albert Institution for the Feeble-minded.—Locum Tenens Jun. Asst. M.O. 8 gns. weekly.

Leigh Infirmary, Lancashire.—Res. H.S. At rate of £150.

Liverpool and District Hospital for Diseases of the Heart, 34, Oxford-street.—H.P.

Northampton General Hospital.—Hon. Pathologist.

Nottingham, City Mental Hospital.—Jun. Asst. M.O. £350.

Oxford, Radcliffe Infirmary and County Hospital.—Hon. Surgeon.

Port Said British Hospital.—Res. Asst. M.O. £350.

Portsmouth, Royal Portsmouth Hospital.—Cas. O. At rate of £100.

Princess Louise Kensington Hospital for Children, North Kensington.—Hon. Asst. Surg.

Queen's Hospital for Children, Hackney-road, E.—Asst. Surg.

Rochester, Kent, St. Bartholomew's Hospital.—H.P. At rate of £175.

Royal Army Medical Corps.—Twenty-five Commissions. £500 to £2000.

Royal London Ophthalmic Hospital, City-road, E.C.—Three Out-patient Officers. Each £100.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Clinical Asst.

Ryde, Royal Isle of Wight County Hospital.—Vacancy on Hon. Medical Staff.

Salisbury, General Infirmary.—Res. M.O. £150.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—H.S. At rate of £75.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. and Asst. Res. M.O.'s. At rate of £175 and £120 respectively.

St. Marylebone General Dispensary, 30, Marylebone-lane, W.—Dental Surgeon to L.C.C. School Dental Clinic.

Torquay, Torbay Hospital.—Hon. Obstetric Physician.

West London Hospital, Hammersmith-road, W.—Hon. Obstetric Registrar.

Woolwich and District War Memorial Hospital, Shooters' Hill, S.E.—H.S. At rate of £125.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

The Chief Inspector of Factories announce vacancies for Certifying Factory Surgeons at Rugby (Warwickshire), Welwyn (Herts), Holmfirth (Yorks), and at Syston (Leics).

A vacancy is announced for a Medical Referee under the Workmen's Compensation Act for St. Albans, Barnet, Hertford and Watford. Circuits 37 and 38. Applications should reach the Home Office not later than Feb. 2nd.

Births, Marriages, and Deaths.

BIRTHS.

ELKINGTON.—On Jan. 10th, at Stockwell House, Bruton, the wife of Dr. Guy Elkington, of a son.

REID.—On Jan. 10th, 1929, at Burntwood, Lichfield, Staffs, to Dr. and Mrs. William Reid—a daughter.

MARRIAGES.

GOSTWYCK—DAWSON.—On Jan. 9th, 1929, at St. Mark's Church, Connah's Quay, Flint, by Rev. E. J. Davies, Cecil Hubert Gostwyck Gostwyck, M.B., F.R.C.P., D.P.M., Deputy Medical Superintendent, Rampton State Institution, Retford, Notts, son of late Lt.-Col. W. G. Gostwyck, 2nd Batt. Argyll and Sutherland Highlanders, to Brenda, youngest daughter of the late Ralph Mainwaring Dawson, of Fulwood Park, Liverpool, and Mrs. Dawson, Kelsterton Hall, Flint.

DEATHS.

BENNETT.—On Jan. 13th, at Upper Berkeley-street, W., Henry Selfe Bennett, M.B. Camb., aged 81.

BOYD-WALLIS.—On Jan. 7th, at Leas Court-mansions, Folkestone, Albert William Boyd-Wallis, M.R.C.S., L.S.A., in his 90th year.

EVANS.—On Jan. 12th, at his residence, Hampstead House, Seaford, Herbert Norman Evans, M.A., M.B. Oxf., aged 93.

HARTLEY.—On Jan. 1st, Francis William Hartley, M.R.C.S., L.R.C.P., of Heywood, Lancashire, aged 63 years.

SIMPSON.—On Jan. 11th, John Watson Simpson, M.B., Ch.B., D.P.H., of Snitterfield, Stratford-on-Avon.

WATSON.—On Jan. 4th, suddenly, at Strathearn-place, Edinburgh, Major Alexander Oswald Cowan Watson, R.A.M.C. (retired), of Carden-place, Aberdeen.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1928.

THE Index and Title-page to Vol. II., 1928, which was completed with the issue of Dec. 29th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Notes, Comments, and Abstracts.

IODINE IN RELATION TO GOITRE.

BY D. W. CARMALT-JONES, M.D. LOND., F.R.C.P. LOND.,

PROFESSOR OF SYSTEMATIC MEDICINE, UNIVERSITY OF OTAGO, NEW ZEALAND; CONSULTING PHYSICIAN, WESTMINSTER HOSPITAL.

PART II.*

Goitre Incidence and Soil Iodine.

If it be true that endemic goitre depends on the poverty of the soil in iodine, then an inverse ratio should exist between the amount of iodine in the soil and the incidence of goitre in any series of districts examined. In such an investigation there are several evident sources of error. It can only be true if iodine deficiency is the only possible cause of goitre, if the iodine available for ingestion is derived exclusively from the local soil, and if perfectly uniform observations are made on all cases examined. These conditions are not realised in practice. Nevertheless, a very searching inquiry has demonstrated a remarkable association between iodine deficiency in the soil and the incidence of goitre in school-children. As stated above, over 90,000 children were examined in 33 districts, from each of which samples of soil were analysed, with about 500 analyses in all. Hercus, Benson, and Carter summarise their results as follows: "The figures for goitre incidence and soil iodine have been plotted as ordinates and abscissæ respectively . . . and a smoothed curve has been drawn through the points obtained. So closely do most of these points lie to the curve that it is apparent that an intimate connexion must exist between the amount of iodine in the soil and the incidence of goitre." A few instances only can be given here. In South Canterbury over 5000 children were examined, 62 per cent. of them had goitre, and the soil contains 4 parts of iodine per 10^7. In Taranaki, again more than 5000 children were examined; Taranaki soil contains 166 parts of iodine per 10^7, and the incidence of goitre was 7 per cent. These are the extreme cases. As an intermediate instance, Wellington soil has 40 parts of iodine per 10^7, and 25 per cent. of goitres were found in more than 2500 children. With rare exceptions, a similar inverse ratio is found throughout the country. The very difficult chemistry in these observations was carried out by Mr. C. L. Carter, M.Sc. The geological problems involved were investigated by Prof. W. N. Benson, and a single instance of the observations made must suffice. Canterbury has a very high goitre incidence; the Canterbury Plains consist very largely of river gravel with very little colloid, and contain nothing to hold soluble salts against leaching. The plains are crossed by many great rivers and the soil is very thoroughly leached; this, no doubt, accounts for the small amount of iodine in it, which is accompanied by a 60 per cent. incidence of goitre in school-children living on the products of the soil.

The establishment of this inverse ratio between goitre incidence and soil iodine is evidently of great importance in the inquiry into the ætiology of endemic goitre. It does not, however, indicate how the iodine is obtained by animals, whether by food or water, and a further research was conducted by Hercus, in association with K. C. Roberts as chemist, into the iodine content of foodstuffs raised on iodine-rich and iodine-poor soils respectively. This established that the essential iodine is normally derived from foods, though a deficiency may on occasion be made good by a water-supply which happens to contain iodine from any source such as iodine-bearing rocks or, as in the case of Lyttelton, from the sea. Such instances are, however, quite exceptional.

—	Goitrous district.	Non-goitrous district.
	Iodine per kilo.	
Grass	47 γ	64 γ
Lettuce ..	12	24
Beef	9·5	16
Eggs	56	137

The research is of the first importance in the rational preventive treatment of endemic goitre, since it lays particular emphasis upon the minute amounts of iodine which

* Part I. appeared last week.

mark the difference between an adequate and an inadequate supply, and it is important that added iodine shall not exceed physiological needs. Specimens of all the common articles of food, obtained from goitrous and non-goitrous districts, have been assayed for iodine, and the iodine content was found to vary sometimes as 2 to 3, sometimes as 1 to 2, and occasionally even more widely. The instances shown in the above table are taken from Hercus and Roberts's paper.

It is thus seen that in ordinary rations the actual weight of iodine ingested in the two districts does not differ very widely, and the actual iodine intake per person per day has been estimated. The iodine content of the entire diet of 40 persons was estimated for a fortnight in Canterbury, a goitrous district, and also in Taranaki, a non-goitrous district. The result was surprising; in Taranaki the mean iodine intake per person per day is 35 γ, in Canterbury it is 20 γ. That is to say, the ingestion of 15 γ iodine daily makes the difference between a goitre incidence in school-children of 7 per cent. in Taranaki and 60 per cent. in Canterbury. The estimated daily requirement of iodine for the proper functioning of the normal thyroid is estimated at 30 γ.

The conclusion of this series of investigations is that endemic goitre in New Zealand is due to deficient iodine in the soil, which is reflected in deficient iodine in the food, a deficiency of such an infinitesimal amount as 15 γ daily being effective.

The Amount of the Prophylactic Dose.

This being so, the obvious prophylactic treatment of the condition is the addition of iodine to the diet, as sodium chloride is universally added. This is, of course, no new thing; what is new is the recognition of the minute amounts of iodine required. Failure to recognise it led to the breakdown of several attempts at prophylaxis in the middle of the nineteenth century. Marine and Lenhart (1917) gave schoolgirls 4 g. of sodium iodide over a period of ten days in two terms, with good results. Hercus and Baker (1921) gave grs. 40, 60, and 120 per annum according to age, with fair results, and without harm. These doses are immensely in excess of physiological requirements, but it appears that in the young no harm is likely to result; only so much iodine as is needed is taken up and the excess is rapidly excreted in the urine. It is otherwise with established goitres in adults, and it is of great importance that prophylactic iodine should be made universally accessible and that it should not be given in excess of physiological requirements. The obvious method seems to be the addition of iodine in suitable amounts to the common salt which has to be added to diet for very similar reasons. Several brands of "iodised salt" are on the market. That sanctioned by the New Zealand Government contains 4 parts per million of potassium iodide. The normal consumption of salt is stated to be about 6 g. per diem—that is, 6 million γ; using iodised salt this should give a daily consumption of 24 γ of potassium iodide, enough to make up the difference between the iodine intake in Taranaki and Canterbury.

Hercus has carefully investigated this method of prophylaxis for any possible bad results. He gave an enclosed population in an institution a salt containing 8 parts of potassium iodide per million. After 18 months no normal children had become goitrous, nearly 70 per cent. of the existing goitres had decreased in size, and there had been no "toxic" cases. It appears, therefore, that iodised salt, 4 parts per million, is of adequate strength and perfectly safe from any risk, and this method of administration is the nearest approach possible to the ingestion of food of natural adequate iodine content.

The Graver Manifestations of Iodine Deficiency.

Simple goitre is the adaptation of the thyroid gland to a particular environment in which the element iodine is not present in adequate amount. The adaptation made may be sufficient to preserve health and no consequences may ensue except a certain unsightliness, but it is also possible that the increase in size may be so great as to cause pressure on important structures, chiefly the trachea. But when a goitre is present there is always the risk of thyroid function being changed, either to excess or defect, so that both hyperthyroidism or "toxic goitre" and hypothyroidism or "myxœdema" may occur. The sequence of events in these conditions and the associated histological changes in the thyroid have been closely studied by Drennan. A normal thyroid is not a uniform structure; parts of it are "hyperplastic," a state called by some observers "active secretory," and other parts are "colloid," resting or storing. The hyperplastic parts are producing and issuing hormone, while the colloid parts lay up a store containing iodine which acts as a reserve during periods of stress or temporary deprivation of iodine. When iodine is not supplied in sufficient amount the thyroid responds to this stress both by hyperplasia, actively secreting without storage, and by increased colloid, increasing the size and number of its alveoli and filling these with colloid at a low iodine concentration; either condition may preponderate. This is the normal response of the thyroid to deprivation of iodine and may be present histologically without any change visible to the naked eye. It has to be considerably advanced before an actual "goitre," *guttur tumidum*, can be detected. A goitre may be called "hyperplastic" or "colloid," but both conditions are to be found somewhere in the gland. Further, the enlargement is not necessarily uniform; isolated masses of either hyperplastic or colloid tissue may occur and are generally called "adenomata." When these changes have occurred there is great liability to hæmorrhage, cyst formation, fibrosis, or atrophy. Drennan recognises three possible variations when the normal thyroid is deprived of iodine: (1) diffuse colloid enlargement, (2) nodular enlargement, and (3) diffuse hyperplasia.

Probably the goitres found among school-children are chiefly in the stage of diffuse colloid enlargement. Many of these are curable by iodine, and revert fairly rapidly to normal; they take up as much iodine as they require and reject any excess, without showing toxic symptoms. In older persons any excess of iodine in treatment is liable to induce toxic symptoms—tachycardia, sweating, nervousness, and possibly exophthalmos. Toxic symptoms do not always or necessarily occur, but they do sometimes, and there is a risk of them. Many forms of stress make heavy demands on the thyroid; menstruation and pregnancy produce actual enlargements, though not great ones, and probably such strains as those induced by university examinations and the like act similarly in young adults. If any excess of iodine be given to a person whose thyroid is accustomed to function with a small allowance of iodine at a time when a heavy demand is being made upon it, toxic symptoms may be produced, presumably because material is supplied for the production of an excess of thyroxin.

Some thyroids become toxic without any excess of iodine; how that comes about is not clear. Iodine treatment may cure diffuse colloid goitre, but iodine in excess may induce toxic symptoms, and that is why prophylactic iodine in salt must be kept down to the irreducible minimum. Much the same is true of the nodular enlargement; on the whole, nodular enlargements more frequently show toxic symptoms, "toxic adenoma," and often take the more serious form of Graves's disease. The actual amount of thyroid tissue present in any given case is an important factor in the precipitation of toxic symptoms. On the other hand, the adenomata are also liable to atrophy and hypothyroidism, up to complete myxœdema. It is perhaps questionable if the condition of diffuse hyperplasia results from iodine deficiency, but there are cases which support it. These are the cases which have shown no goitre until well into adult life. It is suggested that up to that time they were able successfully to compensate for iodine deficiency without visible enlargement. They suddenly develop goitre, with toxicity and often exophthalmos, and constitute "primary Graves's disease." This is not infrequent at the menopause in women, and it may be that when the demand for thyroid activity is thus stopped the thyroid produces a relative excess of thyroxin which induces the toxic symptoms.

"Toxic goitre" is an exceedingly difficult subject. Every case of goitre submitted to stress does not become toxic, and it is not suggested that its occurrence is wholly to be explained by deprivation or excess of iodine, but there are undoubtedly cases in which toxic symptoms may be induced by iodine, so that the greatest care is necessary in its use. A few instances may be recalled in which the exhibition of iodine was followed by toxic symptoms in cases of goitre.

CASE 1.—A woman medical student, with a simple goitre, when working at high pressure in her fourth year of study, was given potassium iodide, grs. 15, thrice daily for the goitre. Graves's disease, ultimately requiring partial thyroidectomy, rapidly supervened.

CASE 2.—A male medical student, aged 23, with a large soft goitre, took grs. 200 of potassium iodide in nine months, rather less than a grain a day. At the end of this time the goitre had disappeared, but tachycardia, tremors, and exophthalmos were present, which subsided in several months without operation.

CASE 3 (by courtesy of Dr. Frank Fitchett).—The chest of a patient with goitre suffering from pleural effusion was painted by tr. iodi, and toxic symptoms supervened.

CASE 4 (also Dr. Fitchett's).—A patient suffering from obesity, which concealed a goitre, received potassium iodide in the prescriptions, and intense hyperthyroidism was induced.

Dr. Fitchett has also reported three cases of students from a ladies' college who showed signs of hyperthyroidism after the introduction of iodised salt having the strength of 1 part of potassium iodide in 5000 (50 times the strength now authorised by the New Zealand Government).

The iodides are drugs in common use in the treatment of bronchitic and rheumatic conditions; the question arises

how far their prescription may be responsible for the induction of toxic symptoms in cases of goitre.

The ætiology of endemic goitre in New Zealand is believed to be understood, and it is also believed that when the profession and the public fully realise the position it will be prevented. Toxic goitre is a far more difficult matter, and these remarks are only an attempt to apply the knowledge which exists about simple goitre to the toxic problem.

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PLASMOCHIN IN MALARIA AND BLACKWATER FEVER.

Dr. Drenowsky[1] has found plasmochin useful in treating malaria in country practice in Bulgaria: it has not the unpleasant taste of quinine, does not cause ringing in the ears or headache, and though in the treatment of 209 cases it did cause—in adults, and about the fourth or fifth day—diarrhœa five times, blueness of the lips and gums three times, and vomiting once, these unpleasant symptoms passed quickly away when administration of the drug was stopped. It is issued in the country districts in Bulgaria by the "quinine distributors," who are taught to give plasmochin to tertian and quartan cases, but plasmochin compound (plasmochin 0·01 g., with 0·125 g. quinine) to subtertian patients, the dose of plasmochin never to exceed 0·01 per kg. of body-weight. This works out at about grs. 10 for a man of 10 st. They must also themselves put the dose into the mouths of the patients, and watch for and report any unpleasant sequels. Good results are claimed. Treatment is given for six days after which the blood is again examined. Should the cure be incomplete, treatment is repeated for six to eight days, and after a five-day pause another course may be given if required. The swelling of the spleen quickly diminishes. Of the 209 cases above-mentioned, three-quarters were said to be cured (of tertian 81, of quartan 61, of subtertian 50 per cent.). Chronic carriers can most hopefully be tackled in winter, when 80 to 90 per cent. of successes are claimed. Four cases of blackwater fever all recovered, pyrexia being lost in three days, hæmaturia in five. Gravid women, Dr. Drenowsky says, take plasmochin without harm, a very important matter, and the drug is useful in the malarial diarrhœa of children. As there are quinine-resisting parasites, so some resist plasmochin. Dr. P. Talianidis reports[2] on the 80 cases of blackwater fever he has treated at Salonica among the refugees during four years ending in December, 1927. Cases appeared mostly in autumn and January—i.e., in the subtertian season. The disease was most often seen in hard-working, poorly fed men, particularly those who took quinine irregularly. He has most confidence in plasmochin in treatment. Of 14 patients treated with this drug, only two died, whereas 21 died in a series of 30 who were given quinine.

CHOCOLATE AND COCOA.

Messrs. Cadbury Bros., Ltd., have this year produced chocolates in several new assortments additional to their well-known brands. From the novelties the firm, it appears, caters for those who like hard centres by an assortment under that name, while for those who prefer soft centres there are other kinds. The samples sent to this office include also specimens of the new chocolate sandwiches in convenient packages, and of Bournville Cocoa. All these delicacies are produced under hygienic conditions, and are known to our readers to be of high quality, while nutritional value has been always under consideration.

LANE'S SCHOOL OF ANATOMY.[3]

ALL familiar with the story of medical education, as the early attempts towards standardisation became effective at the end of the eighteenth century, know the prominent part that was played, especially in London, by the private

(*Continued at foot of next column.*)

[1] Arch. f. Schiffs-u. Trop.-Hyg., 1928, xxxii., 575.
[2] Ibid.
[3] The School of Anatomy and Medicine adjoining St. George's Hospital. By R. R. James, F.R.C.S. Privately printed. 1928. George Pulman & Sons.

THE KING'S ILLNESS.

OFFICIAL BULLETINS.

(*Continued from p. 112.*)

THE following is the text of the official bulletins which have been issued during the past week and signed by Sir Stanley Hewett and Lord Dawson of Penn:—

WEDNESDAY, JAN. 9TH. 8.15 P.M.

The King has had a quiet day. The local conditions make steady progress and there is a slight increase of strength. No further bulletin will be issued till to-morrow evening. (Signed also by Sir Hugh Rigby.)

THURSDAY, JAN. 10TH. 8.15 P.M.

The King has passed a quiet day and there is no change to report in His Majesty's condition. The next bulletin will be issued to-morrow evening.

FRIDAY, JAN. 11TH. 8.15 P.M.

The King has had a restful day. There is no change to report in His Majesty's condition. The next bulletin will be issued to-morrow evening.

SATURDAY, JAN. 12TH. 8.20 P.M.

The King has had another restful day and otherwise the condition of His Majesty remains unchanged. The next bulletin will be issued on Monday morning next.

MONDAY, JAN. 14TH. 11.30 A.M.

His Majesty is making slow progress. The next bulletin will be issued to-morrow evening. (Signed also by Sir Hugh Rigby.)

TUESDAY, JAN. 15TH. 8 P.M.

The King has had a quiet day. The progress previously noted, though slow, continues. The next bulletin will be issued on Thursday morning.

(*Continued from previous column.*)

schools of anatomy. The last of these institutions, popularly known a hundred years ago as "Lane's School," has been now made the subject of an interesting note by Mr. R. R. James, ophthalmic surgeon to St. George's Hospital, the institution with which the school was specially connected. The school was founded by Mr. Samuel Armstrong Lane, a pupil at St. George's Hospital, of Sir Everard Home in 1830, and it continued to exist in a fairly flourishing condition until 1854. It was in some respects the lineal descendent of the school in Great Windmill-street, honourably associated with the names of the two Hunters, Matthew Baillie, James Wilson, Benjamin Brodie, and Cæsar Hawkins, among others. This institution came in some way under the management of Lane, when it was transferred to Grosvenor-place to meet the needs of the students of St. George's Hospital, but almost contemporaneously an anatomical school was started within the hospital, so that there were, for a period, two schools existing within a few yards of each other. Mr. James's pamphlet, several chapters of which have appeared at times in the *St. George's Hospital Gazette*, is especially interesting in the light that it throws on the violent bickering that was quite usual among hospital staffs in those days. It would seem, from Timothy Holmes's "Life of Sir Benjamin Brodie," that at the Great Windmill Street School Brodie had been the pupil of James Wilson, while the son of James Wilson became associated with Lane in starting the anatomical school in Grosvenor-place. This was unfortunate for Lane, as inimical relations existed between Brodie and the son of his former master, and a bad understanding with the all-important Brodie affected Lane's chances of being elected upon the staff of St. George's Hospital. How this resulted in the transference of Lane's school to the new St. Mary's Hospital is explained in Mr. James's interesting chapter on medical history. He gives us a picture of hospital life and medical training as they existed up to the middle of the nineteenth century which bears no resemblance to anything any living practitioner can remember, and once again demonstrates how closely associated the medicine at the beginning of the nineteenth century was with that of the eighteenth century, and how complete the transformation in views and practice was which followed rapidly upon the vast medical progress dating from 1850.